BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, SEPTEMBER 19th, 1936

THE ANAEMIA OF PREGNANCY*

BY

W. CAREY SMALLWOOD, M.B., M.R.C.P.

PHYSICIAN TO OUT-PATIENTS AT THE UNITED (QUEEN'S AND GENERAL) AND CHILDREN'S HOSPITALS, BIRMINGHAM

Although Channing, an American obstetrician, as long ago as 1842 described a condition of severe anaemia which occurred in the course of and apparently as the result of pregnancy, relatively little attention has been paid to the subject. In 1919 Sir William Osler, in a paper entitled "The Severe Anaemia of Pregnancy," again drew attention to the occasional development during pregnancy and the puerperium of severe and dangerous degrees of anaemia, and suggested that the anaemia of pregnancy had not received the study which it deserved. Actually it is only during the last six or seven years that any serious attempt has been made to classify the various anaemias associated with the gravid state and to discover the factors—some of them peculiar to pregnancy—which are responsible for the changes in the mechanism of blood manufacture and maintenance during this period. In comparison with other haematological disorders the anaemia of pregnancy has in this country received little consideration even from obstetricians, and many aspects of the problem still await a solution. Indeed, the performance of routine blood counts or haemoglobin estimations during pregnancy is rare both at ante-natal clinics and in general practice, despite the fact that a woman with anaemia is inadequately fitted for the trials of labour.

Pregnancy may be incidental in the course of any number of diseases which in themselves cause anaemia, such as leukaemia, malignant disease, and nephritis. Severe anaemia may result from ante- or post-partum haemorrhage or puerperal sepsis. There is no evidence that pregnancy affects the course of the disease in conditions such as leukaemia or Banti's syndrome, though Larrabee and Swan have each described a case of familial haemolytic icterus with a haemolytic crisis during the course of what was otherwise a normal pregnancy.

Nomenclature

Disregarding patients with anaemia due to these well-recognized causes, I propose to deal with those blood disturbances in which there is no obvious aetiology and which are apparently due to or aggravated by the pregnancy itself. The literature on this subject is very confusing. It contains many references to a "physiological anaemia of pregnancy"—a condition in which red cells and haemoglobin values show a gradually progressive reduction during the second and third trimesters, with an improvement after delivery. Recent work, however, has shown that not infrequently this anaemia is due to maternal iron deficiency—a condition which can hardly be called physiological. Even greater confusion exists regarding an anaemia which has been described under various titles: pernicious anaemia of pregnancy; pseudo-pernicious anaemia of pregnancy; severe anaemia of pregnancy; haemolytic anaemia of pregnancy; macrocytic anaemia of pregnancy. From a review of the literature it is evident that under these so-called synonyms two distinct entities have been described. First, a condition which I shall call the pseudo-pernicious anaemia of pregnancy; this is closely related to true Addisonian pernicious anaemia and other macrocytic anaemias both in its blood picture and in its response to liver treatment. Secondly, a true acquired haemolytic anaemia similar in its clinical and haematological manifestations to the haemolytic anaemias described by Lederer, Parsons, and others in non-gravid states; in this form not only does the haemolytic agent, whatever that agent may be, have a destructive effect on the red cells in the circulation, but the bone marrow may also be involved and the resultant temporary or permanent marrow paralysis is reflected in the blood picture. This damage to the red cell factory is the probable explanation of many of the "hypoplastic" and "aplastic" anaemias of pregnancy described by Whitby and others. I propose to describe this group under the title "erythronoclastic," suggested by Parsons.

Classification

The classification I have adopted is based on other recent classifications of haematological disorders and emphasizes the importance of the deficiency states, many of which are preventable and all readily curable with modern therapy.

A. PHYSIOLOGICAL ANAEMIA OF PREGNANCY—HYDRAEMIA.

B. DEFICIENCY OR ANHAEMATOPOIETIC ANAEMIA.

1. Deficiency of iron (microcytic hypochromic anaemia).
   - (*a*) Hypochromic anaemia induced by pregnancy.
   - (*b*) Idiopathic hypochromic (Witt's) anaemia, complicated or precipitated by pregnancy.
2. Deficiency of liver factor (macrocytic anaemia).
   - (*a*) Deficiency of extrinsic factor. Tropical macrocytic anaemia, complicated or induced by pregnancy.
   - (*b*) Deficiency of intrinsic factor. (i) True Addisonian pernicious anaemia complicated or precipitated by pregnancy. (ii) Pseudo-pernicious anaemia of pregnancy.

C. ERYTHRONOCLASTIC (HAEMOLYTIC) ANAEMIA.

1. Plastic.
2. Hypoplastic.
3. Aplastic.

D. POST-HAEMORRHAGIC ANAEMIA.

1. Ante-partum haemorrhage.
2. Post-partum haemorrhage.

E. THE ANAEMIA OF PUERPERAL SEPSIS.

F. OTHER ANAEMIAS COMPLICATED BY PREGNANCY.

Streptococcal and staphylococcal septicaemia, malignant disease, leukaemia, nephritis, familial haemolytic icterus, malaria, etc.

I propose to deal with the first three groups of this classification.

* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Oxford, 1936.

Physiological Anaemia

The gravid state is associated commonly with important and well-marked changes in the circulatory mechanism of the mother. The total blood volume is increased; the total volume of red cells and haemoglobin by about 20 per cent., and the plasma volume by an even greater amount, 25 per cent. or more. Hence, although the actual amount of circulating red cells and haemoglobin is increased, the blood is more dilute and a count shows an apparent anaemia. The red cells and haemoglobin are proportionately reduced so that the colour index remains at about unity—a feature which differentiates the condition quite clearly from the iron-deficiency anaemias. It is doubtful whether this hydraemia of pregnancy is ever responsible for a fall in the haemoglobin to a level lower than 70 per cent., and haemoglobin values of less than 80 per cent. are unusual. A diminution of the serum protein accompanies these changes in the red cells so that the blood viscosity is also reduced. This hydraemia is the mechanism by which the increased bulk of maternal tissue is supplied with blood; further, the decrease in the viscosity of the blood is accompanied by a greater cardiac output per beat, which provides adequate gaseous exchange between the mother and the foetus with a minimum of work. The hydraemic state also allows of a relatively big blood loss at the time of the confinement without a proportionate loss of haemoglobin. During the puerperium, rapid readjustments of the blood volume occur with apparent "cure" of this "anaemia."

Iron-deficiency Anaemia

The iron-deficiency anaemia of pregnancy, to which the synonyms hypochromic anaemia and chlorotic anaemia are applied, is by far the most common and important of the anhaematopoietic anaemias of pregnancy. Its incidence is world-wide and its frequency in mild forms is such as to have led to its being wrongly labelled physiological. Indeed, it may be said that from 10 to 20 per cent. of the poorer-class mothers of our large cities are in some degree affected. It is interesting that, so long ago as 1872, in his lectures at the Hôtel-Dieu, Trousseau mentioned the chlorotic anaemia of pregnancy previously described by Cazeau and clearly differentiated it from the hydraemia of pregnancy.

The blood picture is similar to that of other iron-deficiency anaemias. The red count may be normal or diminished but the reduction in haemoglobin is relatively greater, so that the colour index is below unity and may even reach 0.4. The reds are small as determined by estimation of cell volume and cell diameter; in stained films they have a pale appearance, while in many the pigment is seen to be distributed around the periphery of the cell—the so-called pessary forms or ring staining.

The clinical picture may not be striking. The chief complaints are excessive fatigability and loss of sense of well-being, which, however, are usually attributed to the pregnancy itself. In the more severe cases dyspnoea, prostration, and oedema of the dependent parts may be the presenting symptoms, but more often the anaemia is well tolerated and may be overlooked until, when labour is over, the patient collapses. Rarely dyspepsia, dysphagia, soreness of the tongue, and splenomegaly are present. Miscarriage or premature delivery appears to be rather common; further, it is stated that labour is prolonged, the foetal mortality rate higher, and maternal toxaemia and puerperal morbidity more common than in patients treated with iron.

AETIOLOGY

The cause of this widespread iron deficiency is to be found in certain changes in the metabolism of iron which occur during pregnancy—namely:

1. The increased iron requirements
   (*a*) of the mother
   (*b*) of the rapidly growing foetus.
2. The paucity of iron in the mother's diet.
3. The diminished alimentary absorption of the iron as a result of gastro-intestinal abnormalities.

During pregnancy the mother requires more iron to build up uterine muscle and to provide extra haemoglobin for the ever-widening vascular bed of the uterus. The demands of the foetus are even greater, since iron is required both for the synthesis of its tissues and for the accumulation of the large iron stores for utilization during the prolonged iron starvation of the milk-feeding period. The liver of young animals contains five times as much iron, weight for weight, as that of the adult, and it is this mineral drain by a ruthless intrauterine parasite that may bring about an acute anaemic breakdown in the mother whose own reserves are thereby exhausted.

The maternal iron reserves are dependent upon two factors: intake and absorption. There is little doubt that the diets of many women of the poorer classes are inadequate in iron-containing foods such as meat and green vegetables. De states that the average haemoglobin of the native women in Bengal is about 50 per cent., that the anaemia is usually hypochromic—that is, with a low colour index—and that it is worse in those who have borne many children and recurs more severely in successive pregnancies. Davidson, in his study of the poorer classes in Aberdeen, was able to demonstrate iron-deficiency anaemia at two age periods: first, in infancy during the latter half of the milk-feeding period; secondly, in women during the middle and later years of their reproductive life, especially in those who had borne children. Anaemia was not present during the years of childhood nor in males. He concludes, therefore, that the iron intake of the poor in Aberdeen, though sufficient for the requirements of the school child and the adult male, is often insufficient in the female to withstand the loss of iron in the menstrual fluid or the even greater demands of pregnancy. Moreover, the iron starvation of the mothers is also reflected in the development of "simple" nutritional anaemia in their infants who, though usually full-blooded at birth, have soon exhausted what little iron they were able to accumulate during foetal life. The work of Mackay on mothers and infants in the East End of London has shown similar results and has demonstrated that, far from being a "simple" and harmless anaemia, it is responsible for a greatly increased susceptibility to infections, particularly of the bowel and respiratory tract. The production of nutritional anaemia in the offspring as the result of deficiency in the maternal diet is strikingly shown by experiments carried out by Miss Hickmans at the Children's Hospital, Birmingham. Rats fed on an iron-deficient diet, though not themselves anaemic, produce young whose red cells at birth are smaller than normal and who rapidly develop hypochromic anaemia (Graph 1).

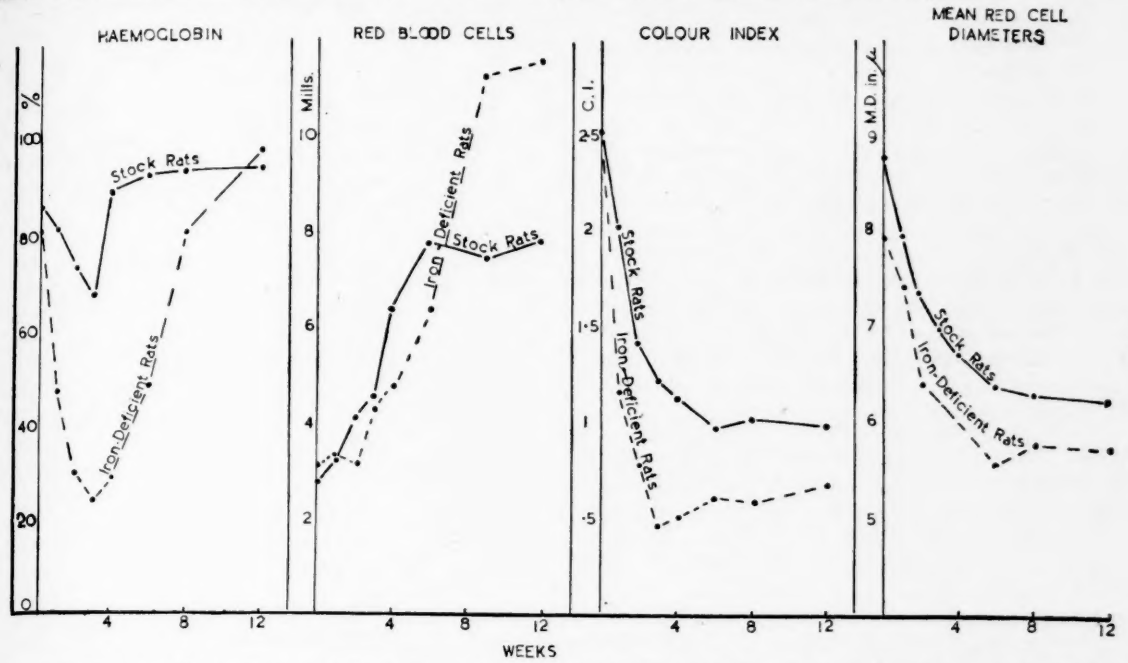
IMPAIRED ABSORPTION

The third factor is the impaired absorption, during pregnancy, of iron from the diet; this appears to be associated with a temporary hypochlorhydria. For some years it has been recognized that the *p*H of the upper intestinal tract is of great importance in the absorption

or utilization of materials necessary for blood formation, foremost among them iron.

In a series of twenty-four normal pregnancies Strauss and Castle demonstrated that 75 per cent. did not secrete

1. Pregnant women (106 cases) attending the ante-natal departments of two hospitals.
2. A similar group (59 cases) who were given iron and ammonium citrate (45 grains daily) for a period varying from one to three months before delivery.



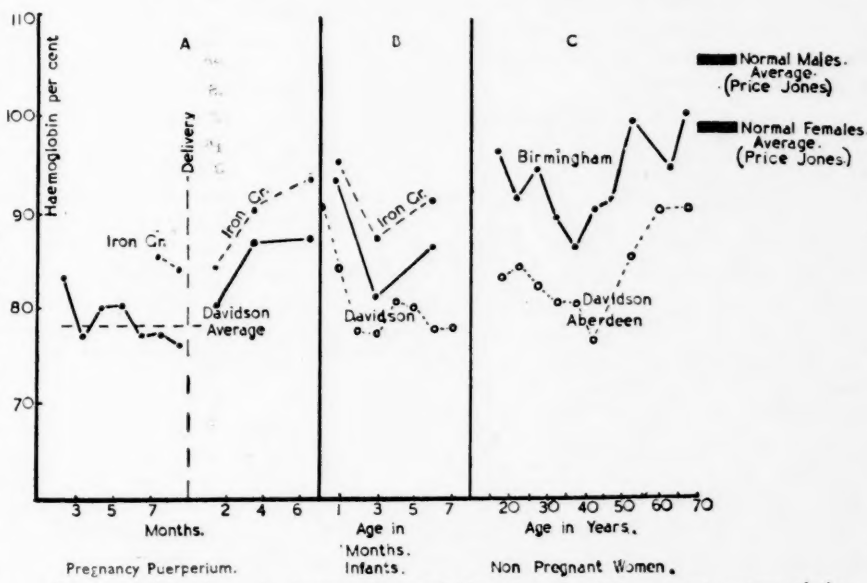
GRAPH 1.—Showing the presence at birth of microcytosis and the development of severe hypochromic anaemia in the young of rats fed on a diet deficient in iron compared with results for the young of stock rats.

normal amounts of free hydrochloric acid or pepsin during more than half the period of pregnancy, that 80 per cent. secreted higher concentrations after delivery, and that secretion during the puerperium was approximately three times as great as during the last three months. Their cases were investigated haematologically, and for purposes of comparison were divided into four groups according to the quality of the diet and the amounts of hydrochloric acid secreted. The results showed that of the three groups of patients who took an adequate diet the average haemoglobin loss during pregnancy was 5 per cent. for those with a high gastric acidity, 9 per cent. for those with low acid, and 18 per cent. for those with a total achlorhydria. In those with a low acid and an inadequate diet the average fall in haemoglobin was 14 per cent.

Graph 2 shows the hitherto unpublished results of a haematological investigation carried out in Birmingham by my colleague the late Dr. R. J. Gittins, on:

3. The infants born to women in Groups 1 and 2.
4. Non-pregnant women of similar social status.

The results are compared with those of other workers and with accepted normal values (Price-Jones), and demonstrate the presence of iron-deficiency states in these women and the development of an anaemia of pregnancy which may be relieved somewhat with iron medication.



GRAPH 2.—Showing: A, Average haemoglobin values for 106 pregnant women of the hospital patient class in Birmingham before and after delivery (shown thus ———) and for a similar group of 59 cases who were given iron during the pregnancy (shown thus .....). B, Average haemoglobin values for the infants born to these two groups of women. C, Average haemoglobin values for non-pregnant women of similar social status in Birmingham (shown thus ———).

SOCIOLOGICAL ASPECTS

Iron-deficiency anaemia is therefore to some extent a social problem. It is seldom seen in private practice. Its frequency and severity in the hospital patient is to some extent governed by the family income, especially by the proportion of that income spent on food, and it may be prevented by the administration of iron. These facts have been well demonstrated by Pillman-Williams and Moore, and it is not surprising, therefore, that the reports of various workers have shown a greatly varying incidence of hypochromic anaemia of pregnancy in different countries,

cities, and even in different districts in the same city. The family income is not the only controlling factor, however. The capricious appetite of the pregnant woman, especially for meat dishes, is well known, and perhaps the obstetrician is not altogether blameless in restricting the intake of ferruginous foodstuffs, such as red meat, in his efforts to prevent toxaemia.

There is no doubt that the maternal diet should be one rich in iron, and that in this the diets of many mothers of the hospital class are extremely deficient. It may indeed be advisable in practice to supplement the diet with iron as is commonly done with calcium, particularly in the case of hospital patients. A daily dose of ferrous sulphate 6 to 9 grains, or iron and ammonium citrate 30 to 50 grains, may be regarded as a certain preventive. When anaemia is once established ferrous sulphate 15 grains, or iron and ammonium citrate 90 grains daily, will ensure a satisfactory recovery, whether given ante or post partum.

Macrocytic Anaemias

These deficiency anaemias of pregnancy constitute a much more dangerous complication than do the iron-deficiency group, but are uncommon in this country. Beckman reported six cases in sixty thousand labours, but it is probable that the condition is rather more frequent than these figures suggest.

The blood picture is similar in all members of this group. The red cell count is usually more markedly reduced than the haemoglobin, so that the colour index is greater than unity. An essential feature of the red cell picture is the increase in the average size of the cells as determined by measurement of their diameters or estimation of cell volume. Anisocytosis and poikilocytosis are almost constant. The white cells may be normal but often the number of polymorphonuclear cells in the circulation is reduced, so that the total white count is low and the differential count shows a relative lymphocytosis.

The work of the last decade has demonstrated that, in the production of macrocytic anaemias, one or more of three deficiencies may play a part—namely:

1. Deficiency of an extrinsic or food factor, probably allied to vitamin B_2 and present in large amounts in yeast, meat, and green vegetables.
2. Deficiency of an intrinsic factor normally secreted in the gastric juice.
3. Deficiency in the absorption and utilization of the "liver factor" produced by the interaction of 1 and 2.

Taking the macrocytic anaemias in order, there occur:

1. *Tropical Macrocytic Anaemia.*—This is rarely, if ever, seen in this country but is common in India, where the diet of the native women is often grossly deficient. This condition appears to be largely the result of a deficiency in extrinsic factor, and responds rapidly to treatment with liver or with preparations rich in extrinsic factor such as marmite. Pregnancy, when it occurs, appears to aggravate the anaemia.

2. *True Addisonian Pernicious Anaemia Complicated by Pregnancy.*—This again must be a rarity for two reasons. First, that the onset of true pernicious anaemia is usually post-menopausal, and secondly, that pernicious anaemia, when it occurs during the reproductive life, appears to bring about a state of relative sterility. The clinical picture is that of "textbook" pernicious anaemia with superficial glossitis, achylia gastrica, occasionally splenomegaly, and not infrequently signs of spinal cord involvement. The condition persists after delivery, unless treated with liver, and relapses if liver treatment is discontinued. The pregnancy is only incidental, but tends to increase the degree of anaemia and in cases already under treatment may necessitate the administration of larger doses of liver. The strain of pregnancy may also be the last straw in causing the breakdown of a red cell mechanism already on the verge of true pernicious anaemia. In a series of twelve hundred cases of progressive pernicious anaemia in America, Cabot states that in one case in every twenty-five the onset was during pregnancy or immediately post partum.

Pseudo-Pernicious Anaemia

There exists, however, as a complication of pregnancy, an entirely distinct clinical entity, which I have already referred to as the pernicious-like or pseudo-pernicious anaemia of pregnancy in order to differentiate it from true pernicious anaemia already described. This anaemia, first described by Channing, has all the haematological features of a macrocytic anaemia and usually develops during the last three months of gestation, though often the condition is not recognized until shortly after delivery. It occurs in younger patients than does true pernicious anaemia (20 to 40 years) and is common in multiparae. The patient fairly rapidly becomes pale and develops a slight icterus. As in true pernicious anaemia, the anaemia is usually comparatively well borne, though lassitude and dyspnoea are common symptoms. In severe cases oedema and albuminuria develop and give a clinical picture suggestive of nephritis, while the onset of coma may suggest toxaemia. Syncopal attacks and retinal haemorrhages are not uncommon, but spinal cord changes and glossitis do not arise. The catastrophes occur usually after delivery, when, as a result of the stress and shock of labour, the enfeebled patient suddenly collapses and becomes moribund. Premature labour is common and the outlook for the infant is correspondingly bad. Fortunately the amount of post-partum haemorrhage is usually surprisingly small. Fever without demonstrable infection, which abates when anti-anaemic therapy is employed, is not unusual, and when it occurs post partum may suggest puerperal sepsis. This anaemia tends to undergo a spontaneous recovery after delivery and, when once cured, to remain so without liver treatment, though in some of the recorded cases the anaemia has recurred with subsequent pregnancies. In this respect the pseudo-pernicious anaemia of pregnancy differs from true Addisonian pernicious anaemia. The causation of this macrocytic anhaematopoiesis has been shown to lie in a temporary cessation of the manufacture of intrinsic factor by the gastric mucosa. This failure of one gastric secretion is sometimes, but not always, associated with a failure of acid secretion, but with the cessation of the pregnancy the intrinsic factor disappears, so that usually those patients who have survived the ordeal of labour make a spontaneous recovery.

In untreated cases the mortality rate is high: for the mother it is from 30 to 75 per cent., for the foetus even higher, so that the pseudo-pernicious anaemia of pregnancy must be regarded as a serious though fortunately a rare disease.

Treatment consists in the administration of large doses of liver parenterally, and the response is as dramatic as in true pernicious anaemia. If labour is not imminent, there will be usually sufficient recovery to allow of a normal labour without excessive danger or distress to the mother. In the presence of infection or if the patient is *in extremis*, or if labour is imminent or has already commenced, liver therapy must be supplemented by intravenous blood transfusion, repeated if necessary. Indeed, this emergency should be eminently suitable for the continuous drip transfusion recently introduced.

The question of delivery by Caesarean section may have to be considered in the severely ill patients in whom labour has already began, and here the decision must depend upon the obstetrical difficulties of the individual case.

Erythronoclastic (Haemolytic) Anaemias

The essential feature of a haemolytic or erythronoclastic anaemia is blood destruction, and the clinical picture varies with the severity and rapidity of the haemolysis.

The onset is usually during the last three months of pregnancy, but in some cases symptoms do not develop until after delivery. In the more acute cases the patient rapidly becomes pale and ill, with dyspnoea and prostration. The skin and mucous membranes are pale and the conjunctivae may become icteric. Usually the spleen is palpable and the liver may also be enlarged. During the stage of red cell destruction the urine contains urobilin and urobilinogen in excess, and in the more severe cases haemoglobinuria may appear. The van den Bergh test shows a positive indirect reaction. The nature of the blood picture depends to some extent upon the state of the bone marrow and its reaction to the blood loss. The anaemia is usually severe. The red cells and haemoglobin are proportionately reduced, so that a colour index of approximately unity is usual. The cells are of average size or contain at most only a few macrocytes in contradistinction to the pernicious-like anaemia of pregnancy, in which well-marked macrocytosis is necessarily an essential feature of the disorder. Anisocytosis and poikilocytosis are present. In those cases in which the bone marrow has remained uninjured polychromasia is well marked and nucleated red cell forms may appear even in untreated cases. This type may be referred to as "plastic." In spite of all this bone marrow activity, however, the degree of anaemia may remain unaltered. A leucocytosis up to 40,000 per c.mm. is usual and immature white cells of the granular series may be seen.

The blood picture is therefore essentially different from that of the pseudo-pernicious anaemia of pregnancy, in which macrocytosis is invariably present, signs of blood regeneration occur only after delivery or as the result of liver treatment, and the white cell count is normal or reduced. In those cases in which bone marrow injury has accompanied the haemolysis of the circulating red cells, signs of regeneration are few or altogether absent, and these may be described as hypoplastic or aplastic forms. The disease is rare, but obstetrical shock following delivery is common and the mortality rate high. Cases that survive the trial of labour may recover spontaneously, especially the plastic forms. The nature of the poison responsible for the haemolysis is unknown. In many cases sepsis seems to have played a part. Pregnancy appears to behave as a predisposing factor, and there is some evidence that the disease may recur in subsequent pregnancies. In the treatment of erythronoclastic anaemia iron and liver are seldom of value, but intravenous blood transfusion, repeated, if necessary, may truly be regarded as a life-saving measure. By providing red cells for immediate use in the circulation, transfusion will tide the patient over a crisis: in most cases it appears to stir up the bone marrow to greater activity, and in a manner that is little understood it stops the haemolytic process.

Conclusion

To sum up the problem, there exist in this country, more especially in hospital patient class practice, mild degrees of hypochromic anaemia of pregnancy which, though seldom dangerous to life, are nevertheless responsible for minor ailments and ill-health in both mother and child, and may be prevented or cured by a generous diet and the exhibition of iron. Occasionally severe and dangerous degrees of anaemia develop during and as a result of pregnancy, especially in the later months of gestation. These conditions demand detailed haematological investigation, accurate diagnosis, and prompt treatment appropriate to the type of anaemia present. A routine haemoglobin estimation at about the seventh month of pregnancy and detailed haematological investigation of all cases showing severe degrees of anaemia should form an essential part of ante-natal supervision.

HYPOCHROMIC ANAEMIAS OF PREGNANCY AND THE PUERPERIUM

BY

HAROLD W. FULLERTON, M.A., M.B., Ch.B.

BEIT MEMORIAL RESEARCH FELLOW

(From the Department of Medicine, University of Aberdeen)

The effects of repeated pregnancies in producing iron-deficiency anaemia have already been discussed (*Journal*, September 12th, page 525. In this communication particular attention will be paid to the problem of hypochromic anaemia occurring during gestation, and the importance of the blood loss at parturition will be dealt with in some detail. During the last century Nasse and Fouassier[1] pointed out the reduction in red cells which takes place in gestation. Since then workers in many countries have contributed studies of the anaemias of pregnancy, and the increased interest in haematology during the past ten years has embraced this field. The work of many authors in America,[1 2 3 4 5 6 7] Britain,[8 9 10 11] Germany,[12 13] Norway,[14] India,[15] and New Zealand,[16] has shown that anaemia often appears in pregnancy and has a widespread geographical distribution. The aetiology of the anaemia has been discussed by Strauss,[17] Strauss and Castle,[18] Witts,[19] Bethell,[20] Irving,[21] Boycott,[11] and others; and Richter, Meyer, and Bennett,[5] Corrigan and Strauss,[22] Wills,[23] Toland,[24] Irving,[21] and Bethell[20] have studied the effects of treatment. The views held by most authorities are that hypochromic anaemia, often of severe degree, occurs frequently during pregnancy; that its production depends on an iron deficiency due mainly to the supply of iron to the foetus; and that iron therapy is followed by good results.

There has been a tendency to confine investigations into the incidence of anaemia among women to the period of pregnancy, because it is during this time that large numbers of women present themselves for routine supervision at ante-natal clinics, and so render such investigations easy. It is a more difficult matter to obtain blood examinations in a large series of non-pregnant women who complain of no symptoms of ill-health. The high incidence of anaemia found in practically all series of gravid women has led naturally to the assumption that pregnancy is the cause of the anaemia. Our figures have shown clearly that, while anaemia is frequent among pregnant women, it is only slightly less frequent among non-pregnant women, and the incidence of severe anaemia is actually less in the former group. In addition, there is a greater tendency to perform blood examinations at this rather than at other times, because such symptoms as breathlessness and oedema of the ankles, which are so common in pregnancy, often raise the suspicion of anaemia. The frequency with which anaemia will be found has already been pointed out; it is therefore natural that its relation to pregnancy should have been repeatedly stressed, since the symptomatology of pregnancy tends to make more evident the chronic anaemia so common in women. For these reasons, then, the anaemias of pregnant women have been widely studied, and comparatively little attention has been paid to those of non-pregnant women, apart from the severe cases which form the "idiopathic hypochromic" group.

Fall in Haemoglobin

Practically all authors are agreed that there is a fall in the haemoglobin level in pregnancy, but the degree of this fall and the period of gestation at which it is maximal show considerable variation in different series of cases. Richter, Meyer, and Bennett,[5] Feldman *et al.*,[25] Bland,

Goldstein and First,[1] Kerwin and Collins,[7] Wills,[23] McGeorge,[16] and Galloway[4] found that the fall progressed until shortly before term, while the series of cases reported by Strauss and Castle[26] showed a slight rise after the end of the second trimester. The results we obtained in investigating 1,166 women during pregnancy and at various times after delivery are shown in Fig. 1. The average haemoglobin level of women seen at different times during pregnancy falls from 83.3 per cent. at the twelfth week to 74.3 per cent. at the thirty-seventh week, and rises to 76.5 at the thirty-ninth week. In addition, it has been demonstrated by several authors[16 26 27] that a rise in haemoglobin occurs in most cases after delivery. Our data show (Fig. 1) that throughout the first year after delivery the haemoglobin level rises from 74 per cent. within two days after labour to approximately 85 per cent. six to eleven months after delivery, after which the level is stationary. Moreover, ninety-seven untreated women seen during pregnancy and again about one year after delivery showed an average increase in haemoglobin of 8.6 per cent. In fifty-four women who received iron therapy during pregnancy the increase was 10 per cent. These increases have been arranged in Table I according to the haemoglobin level in gestation. It is seen that the lower the haemoglobin level at this time the greater is the rise which occurs after delivery.

The fall in haemoglobin level during pregnancy is one of the main factors leading to the belief that pregnancy causes an anaemia to develop in many cases as a result of iron transference to the foetus. However, a critical study of the literature leads one to the conclusion that most authors dealing with the hypochromic anaemia of pregnant women have adopted this theory without proper consideration of the possibility that the anaemia existed before gestation. It should be pointed out, however, that Schultz,[28] and Mussey, Watkins, and Kilroe,[29] thought that severe hypochromic anaemia in pregnancy was really a pre-existing condition. Boycott[11] stated that this possibility was difficult to disprove.

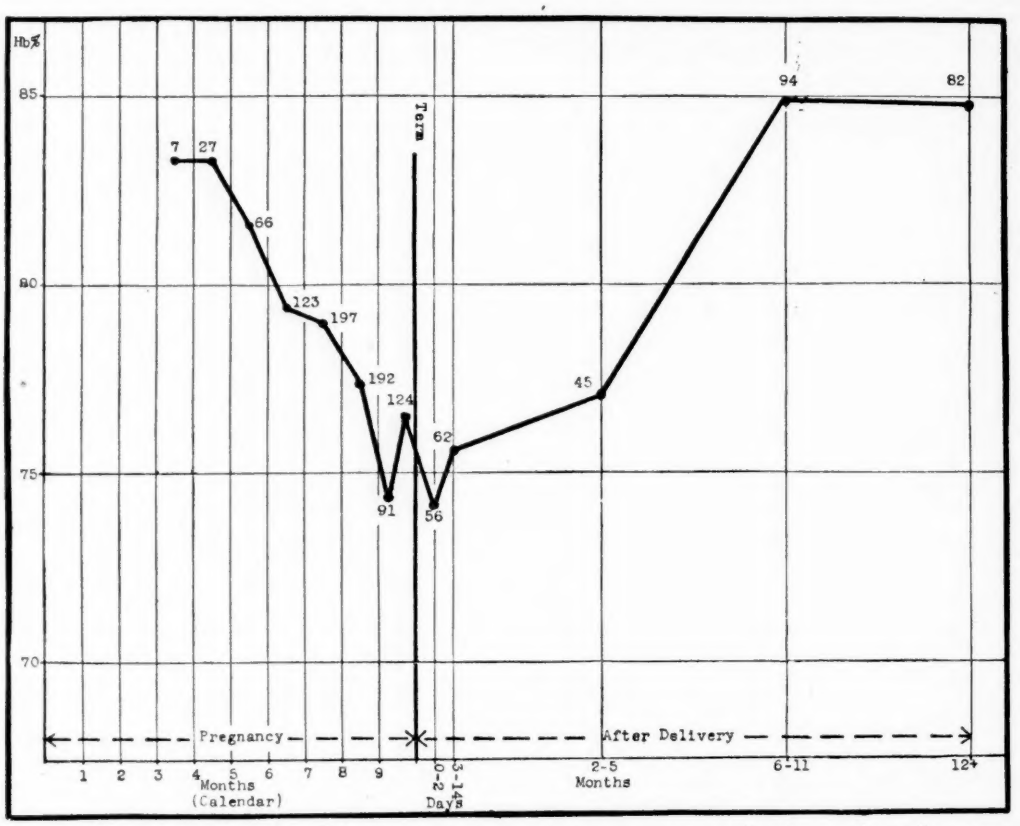


FIG. 1.—Haemoglobin levels in 1,166 women during and after pregnancy. The figures along the curve show the number of women examined at that particular stage.

TABLE I.—*Changes in Haemoglobin Level between Pregnancy and One Year after Delivery.*

Haemoglobin level in pregnancy ...		<50	50–59	60–69	70–79	80–89	90–99
Iron therapy in pregnancy: 54 cases	Number of cases	1	2	9	13	23	6
	Average change in Hb	+22.0	+36.0	+14.0	+15.1	+6.1	−2.8
No therapy: 97 cases	Number of cases	—	4	16	39	25	13
	Average change in Hb	—	+12.3	+16.1	+11.6	+5.5	−5.0
Combined series: 151 cases	Number of cases	1	6	25	52	48	19
	Average change in Hb	+22.0	+20.2	+15.4	+12.5	+5.8	−4.3

Physiological Hydraemia

A factor of great importance in anaemic states during pregnancy is the physiological hydraemia or dilution of the blood. Dieckmann and Wegner[30] have constructed a table summarizing many of the published results. In all but two of the ten series in which the blood volumes of pregnant and non-pregnant women were compared, there was an increase in the former group. When it is considered that these results are stated in terms of percentage of body weight, which shows gains of 20 to 30 lb. during gestation,[31] the absolute increases in blood volume are still more striking. Similar results have been shown by Dieckmann and Wegner,[30] Feldman *et al.*,[25] Oberst and Plass,[32] and Richter, Meyer, and Bennett.[5] These studies indicate that the increase is particularly in the plasma volume, although in some cases there is a gain in total cell volume. Calculations from the data of Dieckmann and Wegner[33] for women during the eleventh to sixteenth, twenty-seventh to thirtieth, and thirty-sixth to fortieth

weeks of gestation show that the average amount of total circulating haemoglobin is practically the same at these three periods. According to these authors, the volume of the blood plasma has increased by 25 per cent. at term. Individual cases of theirs showed all degrees of change between a slight reduction in the plasma volume and an increase of over 100 per cent. It is generally held that this hydraemia becomes less towards the end of pregnancy and still less very soon after delivery, but the time at which it disappears completely has not been clearly established. It is evident, therefore, that the increased incidence of anaemia and the fall in haemoglobin level can be explained prima facie on the basis of blood dilution at least as satisfactorily as by the presumption of an iron deficiency due to transference of iron from mother to foetus.

Several authors have failed to realize that, although a fall in haemoglobin may be prevented or transformed into a rise by iron treatment of a group of pregnant women, this does not constitute proof that the fall which otherwise occurs is due to the development of iron deficiency and

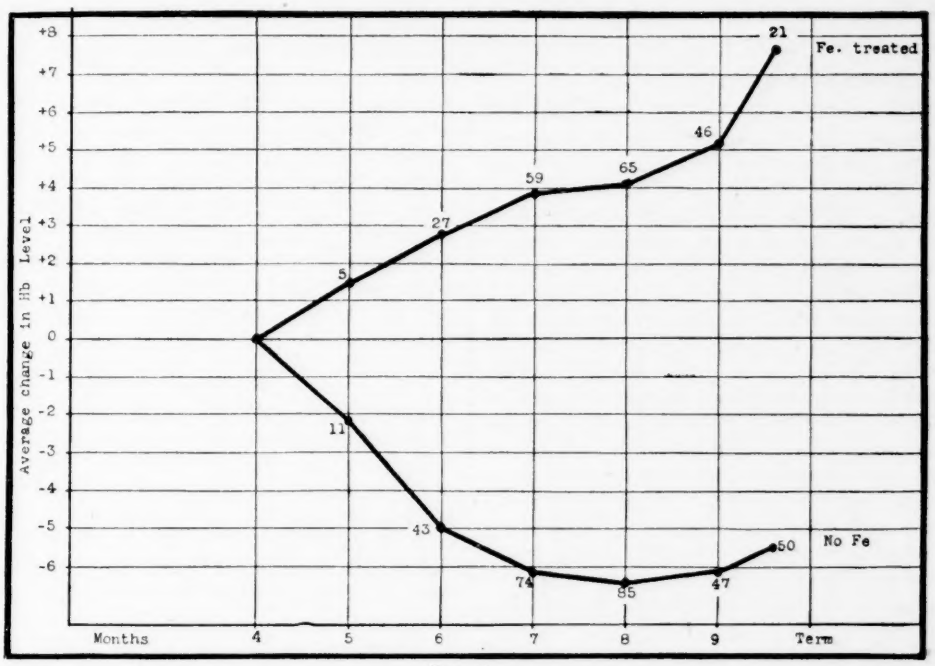


FIG. 2.

not entirely to blood dilution unless it is definitely shown that none of the women suffered from iron deficiency prior to the pregnancy. A woman with hypochromic anaemia who becomes pregnant will respond to iron therapy quite satisfactorily, and the resulting increase in haemoglobin formation may entirely mask the fall which hydraemia would produce. Therefore, the changes in the haemoglobin level during iron treatment of a gravid woman suffering from hypochromic anaemia depend on the resultant of two factors: new haemoglobin formation, tending to cause a rise, and hydraemia, tending to cause a fall. It should also be noted that the unsatisfactory results of iron therapy sometimes seen in pregnancy are due to the fact that the rise in the haemoglobin percentage which occurs represents, not the difference at the beginning and at the end of treatment, but the difference between the level at the end of treatment and one which at that time might have been considerably lower than the initial value as a result of increased hydraemia. This point is well illustrated by Fig. 2, in which the changes in haemoglobin level in a series of women treated with ferrous sulphate (9 grains daily) have been calculated from month to month during gestation. In cases where haemoglobin estimations were made at an interval of two or three months the change over that period was divided by two or three, respectively, and the result taken as the change which would take place in each month. Similar calculations were applied in a series of women who received no therapy. Both groups are representative of the total series of 819 pregnant women examined, and contain, therefore, few cases of severe anaemia. It is seen that while the upper curve shows a rise of almost 8 per cent., the lower curve falls, so that the difference at term exceeds 13 per cent.

Changes in Colour Index

We must conclude, then, that before the hypothesis that severe hypochromic anaemia develops frequently during an uncomplicated pregnancy can be accepted, arguments other than those already discussed are necessary. For example, a definite fall in the colour index during pregnancy would be strong presumptive evidence of iron deficiency. It is possible to calculate colour indices from the charts of Strauss and Castle,[26] compiled from data on haemoglobin estimations and red cell counts in 200 women. At 100 days' gestation the average colour index was 0.87 and at 250 days it was again 0.87. Bland, Goldstein, and First[27] give figures for the haemoglobin and red cells of fifty women seen during pregnancy and again two to six months after delivery. The average colour index at both times was 0.94, although the average haemoglobin level in pregnancy was 14.6 per cent. less than that after delivery. The fact that the reductions in haemoglobin and red cells observed during pregnancy were exactly proportional in both these series is much more in favour of a purely hydraemic process than a deficiency of iron resulting from gestation. It is, however, possible that the response to a marked degree of hydraemia is an increased production of red cells by the bone marrow. If the iron reserves are very low, these new cells will be poorly haemoglobinized and will cause a lowering of the colour index. Thus it is theoretically possible that a fall in the haemoglobin concentration and in the colour index might occur in the presence of an increased amount of circulating haemoglobin. In other words, signs of an iron-deficiency anaemia could develop although the amount of iron in the circulation had actually increased. Although it is probable that the supply of iron to the foetus is a factor which would accentuate this relative iron deficiency,

it will be shown later that its effect can only be slight. Thus even the development of anaemia with lowering of the colour index cannot be taken as definite evidence that the maternal iron content has been reduced by the demands of the foetus.

It is of more importance, however, to realize that before cases of hypochromic anaemia can be attributed to the iron demands of the foetus, a fall in the colour index during pregnancy must be shown. Moreover, this fall should occur particularly during the last trimester, when the iron supply to the foetus is at a maximum and the degree of hydraemia may be decreasing. In the series of cases described by Boycott[11] as hypochromic anaemias of pregnancy, the colour index was low initially but did not decrease significantly as gestation progressed. It is therefore probable that in these cases some degree of hypochromic anaemia antedated the pregnancy. Reports of cases of hypochromic anaemia during pregnancy, proved by blood examination to have had no previous anaemia, have not been found in the literature. On the contrary, the histories of published cases[34] lead one to suspect strongly that anaemia had been present for several years.

Pre-existing Anaemia

In support of their contention that a true iron-deficiency anaemia had occurred during gestation, Strauss[4] and Castle[26] stressed the fact that their cases did not improve significantly after delivery. The number of their cases, however, was small. As has been pointed out by Boycott,[11] the degree of blood loss at parturition is such a variable factor that a large series of cases is necessary before any conclusions can be drawn regarding the changes in haemoglobin level during the puerperium. Moreover, our data indicate (Table I) that the rise in haemoglobin during the first year after delivery varies inversely with the haemoglobin level during pregnancy. We may conclude, therefore, that there appears to be no real evidence to support the view that the severe hypochromic anaemias of gestation are due to the iron demands of uncomplicated pregnancy. It appears much more probable that such anaemias antedate the pregnancy and apparently are rendered more severe by hydraemia.

The quantitative aspect of the problem may now conveniently be discussed on the basis of the figures presented in the previous paper. Taking 550 mg. as the total "iron demand" and 280 days as the duration of gestation, we find that in order to satisfy this demand a woman needs to achieve a positive iron balance of just under 2 mg. daily. This represents roughly a retention of slightly less than one-half of the "available iron" contained in the average dietary of women of the poor classes. It may be deduced, therefore, that in many cases some loss of maternal iron occurs during gestation. If, however, over the whole of pregnancy only 1 mg. of iron is retained daily, then 270 mg. will be deducted from the maternal iron content. The total change in the haemoglobin level resulting from this loss would be a fall from 100 to 90 per cent.* This hypothetical case probably represents fairly accurately the iron deficit in a woman with gastric hypofunction taking an iron-poor diet. If throughout pregnancy no dietary iron whatsoever be retained, the haemoglobin level would fall from 100 per cent. to 78 per cent. These calculations presume a complete absence of maternal iron reserves, a condition which probably never arises. Since the supply and demand of iron over the whole period of pregnancy have been considered, it is irrelevant to object that iron transference to the foetus is not a uniform process but becomes increased towards the end of gestation.

* In this and the following calculations the blood volume is taken as 5 litres and 100 per cent. haemoglobin as equivalent to 50 mg. of iron per cent.

It is therefore clear that even in circumstances which are as unfavourable as possible and which probably never exist, only a moderate degree of anaemia can develop as a result of the iron demands of uncomplicated pregnancy. Moreover, the above calculations apply only to the total effect of pregnancy—that is, the effect on the maternal organism at term. Most of the published cases of the hypochromic anaemia of pregnancy have had marked anaemia at or before the end of the second trimester. At this stage the iron content of the foetus is probably slightly less than 100 mg.[35] and one may take 180 mg. to represent approximately the total iron loss. In the absence of any retention of dietary iron, this loss would be accounted for by a fall in the maternal haemoglobin from 100 to 93 per cent.

Consideration of the problem from a quantitative point of view thus supports our previous conclusion—namely, that cases of severe hypochromic anaemia in pregnancy are cases of pre-existing anaemia rendered apparently more severe by blood dilution. This contention is supported also by the results of repeated haemoglobin estimations in a series of twenty-one women first seen when gestation had lasted for an average period of 6.9 months. All of them had haemoglobin percentages of less than 70 at this time, and therefore, as a group, they suffered from iron deficiency. After a further two months, during which iron transference to the foetus was presumably at a maximum, the haemoglobin level of the group had risen by 5 per cent. Bland, Goldstein, and First[1] found that 58 per cent. of forty-five women in whom the red cell count was below 3.5 millions before the end of the second trimester showed definite improvement before term. These findings are probably due to an early reduction in hydraemia, and are certainly strong evidence against an increase in anaemia.

Blood Loss at Parturition

The effect of repeated pregnancies in the production of hypochromic anaemia has already been discussed. In this connexion it was pointed out that while about 350 c.cm. of blood represented the average haemorrhage at parturition, very wide variations existed. Published figures[4 5 30] range from 75 to 1,020 c.cm. It is obviously important to distinguish clearly between the sudden blood loss of parturition and the iron transference to the foetus, which takes place over a period of nine months and is therefore compensated, at least to a large extent, by the absorption of dietary iron. Such acute blood loss may bring about severe hypochromic anaemia, since the iron reserves in the class of women under consideration must be low in many cases. Consideration of a hypothetical case will make it clear that, with the average dietary taken by the poor women in this city, little haemoglobin regeneration is possible following haemorrhage. If 2.5 mg. of dietary iron be retained daily during six months' lactation, the gain in iron at the end of this period would be 270 mg. (total retention of 450 mg. less 180 mg. iron loss during lactation). In a case in which post-partum haemorrhage has reduced the haemoglobin level to 50 per cent., complete utilization of 270 mg. of iron in haemoglobin synthesis would produce a rise in the haemoglobin up to 61 per cent. The resumption of menstruation after six months' lactation will in many cases either prevent a further rise in haemoglobin level or produce a gradual fall. Thus it is probable that the frequency with which a history of anaemia dates back to a previous pregnancy is usually due to excessive blood loss at parturition and not to the supply of iron to the foetus.

Some interesting points regarding the effect of the blood loss at parturition are illustrated by our findings. Thirty-four women were examined within a few days of term, within forty-eight hours after delivery, and again on the ninth day of the puerperium. The average haemoglobin

levels at these three times were 75.4, 69.9, and 74.7 per cent. Since the physiological hydraemia becomes less during the latter part of pregnancy, and still less after delivery, the fall in haemoglobin level occurring just after labour must be due to the blood loss at parturition. Actually seven out of the thirty-four cases showed a rise forty-eight hours after delivery, while in twenty-seven the haemoglobin fell in varying degree, the maximum fall being 28 per cent. Between forty-eight hours and the ninth day after delivery no case showed a fall, and the average rise in haemoglobin was 4.8 per cent. This rise is due to progressive decrease in hydraemia and to haemoglobin regeneration following the haemorrhage of parturition.

Since hydraemia becomes less before term and during the puerperium, it might be deduced that the difference in haemoglobin level during pregnancy and a few days after delivery would indicate the extent of the blood loss at parturition, and therefore might give a clue as to the probable course of the haemoglobin level during the first few weeks of the puerperium. We have data on fifteen women to illustrate this point, and while one cannot draw definite conclusions from such a small number the results are at least suggestive. Seven of the fifteen showed a fall in haemoglobin or a rise of less than 5 per cent. between pregnancy and a few days after delivery. In these the rise which occurred between pregnancy and a few weeks after delivery was 6 per cent. In this group the blood loss at parturition was probably severe, since reduction in the physiological hydraemia resulted in little or no change in the haemoglobin level shortly after delivery. Consequently the further reduction in hydraemia during the puerperium produced only a slight rise in haemoglobin above the level in pregnancy. Eight of the fifteen showed a rise of 5 per cent. or more between pregnancy and the first few days of the puerperium. In these blood loss at parturition was probably slight, and the average rise in the haemoglobin level between pregnancy and a few weeks after delivery was 21 per cent.

Conclusions

1. The average haemoglobin levels of poor women fell during pregnancy up to the thirty-seventh week of gestation, and then rose slightly before delivery.

2. A rise in the haemoglobin level occurred from forty-eight hours post partum to six to eleven months after delivery.

3. Even in women of the poor classes the transference of iron from the mother to the uterus and its contents is compensated wholly or to a large extent by dietary iron.

4. In cases where this demand exceeds the retention of dietary iron, the degree of maternal iron deficiency which results is only slight.

5. Where hypochromic anaemia in pregnancy is marked, anaemia has probably existed before the pregnancy, but has been made more apparent by physiological hydraemia.

6. Therefore, the conception that uncomplicated pregnancy frequently produces a severe degree of hypochromic anaemia should be discarded.

7. The blood loss at parturition varies greatly in degree and often produces severe hypochromic anaemia.

My thanks are due to Professor Davidson for his help and advice throughout the investigation.

REFERENCES

[1] Quoted by Bland, P. B., Goldstein, L., and First, A.: *Surg., Gynecol. and Obstet.*, 1930, l, 954.
[2] Bland, P. B., Goldstein, L., and First, A.: *Amer. Journ. Med. Sci.*, 1930, clxxix, 48.
[3] Lyon, E. C.: *Journ. Amer. Med. Assoc.*, 1929, xcii, 11.
[4] Galloway, C. E.: Ibid., 1929, xciii, 1695.
[5] Richter, O., Meyer, A. E., and Bennett, J. P.: *Amer. Journ. Obstet. and Gynecol.*, 1934, xxviii, 543.
[6] Moore, J. H.: Ibid., 1930, xx, 254.
[7] Kerwin, W., and Collins, L. L.: *Amer. Journ. Med. Sci.*, 1926, clxxii, 548.
[8] Davidson, L. S. P., Fullerton, H. W., and Campbell, R. M.: *British Medical Journal*, 1935, ii, 195.
[9] Davies, D. T., and Shelley, U.: *Lancet*, 1934, ii, 1094.
[10] Mackay, H. M. M.: Ibid., 1935, i, 1431.
[11] Boycott, J. A.: Ibid., 1936, i, 1165.
[12] Blumenthal, R.: *Betr. z. Geburt. u. Gyn.*, 1907, ii, 414.
[13] Kühnel, P.: *Zeit. f. Geburt. u. Gyn.*, 1927, xc, 511.
[14] Toverud, K. U.: *Acta Paediatrica*, 1935, xvii (Supp. 1), 131.
[15] Balfour, M. I., and Wills, L.: *Journ. Assoc. Med. Women in India*, 1935, May 5th to 8th, p. 10.
[16] McGeorge, M.: *Journ. Obstet. Gynaecol. British Empire*, 1935, xlii, 1027.
[17] Strauss, M. B.: *Journ. Amer. Med. Assoc.*, 1934, cii, 281.
[18] Strauss, M. B., and Castle, W. B.: *Amer. Journ. Med. Sci.*, 1933, clxxxv, 539.
[19] Witts, L. J.: *Medical Officer*, 1935, liv, 151.
[20] Bethell, F. H.: *New York State Journ. Med.*, 1935, xxxv, 799.
[21] Irving, F. R.: *Amer. Journ. Obstet. and Gynecol.*, 1935, xxix, 850.
[22] Corrigan, J. C., and Strauss, M. B.: *Journ. Amer. Med. Assoc.*, 1936, cvi, 1088.
[23] Wills, L.: *Proc. Roy. Soc. Med.*, 1935, xxviii, 1403.
[24] Toland, O. J.: *Amer. Journ. Obstet. and Gynecol.*, 1936, xxxi, 640.
[25] Feldman, H., Van Donk, E. C., Steenbock, H., and Schneiders, E. F.: *Amer. Journ. Physiol.*, 1936, cxv, 69.
[26] Strauss, M. B., and Castle, W. B.: *Amer. Journ. Med. Sci.*, 1932, clxxxiv, 663.
[27] Bland, P. B., and Goldstein, L.: *Journ. Amer. Med. Assoc.*, 1929, xciii, 582.
[28] Schultz, W.: *Münch. med. Woch.*, 1933, lxxx, 679.
[29] Mussey, R. D., Watkins, C. H., and Kilroe, J. C.: *Amer. Journ. Obstet. and Gynecol.*, 1932, xxiv, 179.
[30] Dieckmann, W. J., and Wegner, C. R.: *Arch. Int. Med.*, 1934, liii, 71.
[31] Cummings, H. H.: *Amer. Journ. Obstet. and Gynecol.*, 1934, xxvii, 808.
[32] Oberst, F. W., and Plass, E. D. Quoted by Feldman *et al.*: *Amer. Journ. Physiol.*, 1936, cxv, 69.
[33] Dieckmann, W. J., and Wegner, C. R.: *Arch. Int. Med.*, 1934, liii, 188.
[34] Strauss, M. B.: *Amer. Journ. Med. Sci.*, 1930, clxxx, 818.
[35] *Growth and Development of the Child.* Part III. *Nutrition.* Appleton Century Company, 1932, New York, p. 231.

PREVENTIVE MEASURES IN DERMATOLOGY*

BY

R. M. B. MACKENNA, M.A., M.D.CAMB., M.R.C.P.LOND.

HONORARY DERMATOLOGIST, ROYAL SOUTHERN HOSPITAL, LIVERPOOL

The discussion which I have the privilege of opening concerns "Preventive Measures in Dermatology." At the first hearing that phrase has a novel sound, but I am not introducing yet another subdivision of the science and art of medicine: 450 years before Christ the writer or writers of the early chapters of Leviticus were concerned with the prevention of a disease which has cutaneous manifestations. The whole fifty-nine verses of the thirteenth chapter of Leviticus are devoted to the differential diagnosis of leprosy, the isolation of the patient once the disease has been diagnosed, and the purification of his clothing. One could quote several relevant examples of the preventive measures which have been taken in former centuries, but I will merely refer to the introduction of the quarantine system by the Venetians in A.D. 1403 in order to prevent the spread of bubonic plague—a disease which is inoculated through the skin by the bite of an infected flea; to the Turkish custom described in 1717 by Lady Wortley Montague[1] whereby persons were inoculated with variolous matter and after having developed a mild attack of smallpox were immune to the disease; and to Jenner's work on variola and vaccinia.

I have mentioned these few well-known facts to emphasize that although it was not until the middle of the

* Read in opening a discussion in the Section of Dermatology at the Annual Meeting of the British Medical Association, Oxford, 1936.

nineteenth century that, under the influence of Ferdinand Hebra, dermatology became a recognized specialty, nevertheless it was in the sphere of diseases having cutaneous manifestations that the science of preventive medicine was born.

Psoriasis

To-day our discussion is to centre not on the protection of the community from contagious diseases, but on the protection of the individual from dermatological vicissitudes, and I think it will be proper to commence by a brief consideration of a few of the problems presented by an inherited disease—psoriasis. In at least one textbook it is stated that psoriasis does not constitute a bar to marriage, but I have known of not a few instances where women have deliberately refrained from having children lest their offspring should be affected with the disease. Further, all of us must know of families in which the first-born has developed psoriasis, and the parents have been so distressed to find that the taint has been transmitted to the child that, rightly or wrongly, they have taken steps to prevent a further conception. Admittedly, in some cases the presence of psoriasis in the family furnishes an excuse for infecundity. The father may regard children as being hostages to fortune and a source of financial encumbrance, while the mother may not wish to face again the discomforts of pregnancy and the pain of parturition. But in other cases the fear of transmitting the disease to the children is justifiable and worthy of our consideration. Cockayne,[2] in his book *Inherited Abnormalities of the Skin*, agrees that there is strong evidence that psoriasis is inherited, and quotes certain authors whose work has shown that the disease behaves as a Mendelian dominant characteristic.

> "If, as many believe, psoriasis is due to an inherited predisposition and an external cause as well, the dominance may really be complete and regular, the excess of normal sibs and the conductors having inherited the predisposition, but not having been exposed to the external cause."

Heiner[3] has given the pedigree of two unrelated psoriatic persons who married. They had three sons: two of the sons had psoriasis; the third son was apparently normal, but his son suffered from the disease. In all, five of the grandchildren had psoriasis.

I have mentioned these matters so that we may discuss the problem with which we are occasionally faced in practice, but which, I think, has not been discussed recently at a dermatological meeting: the problem may be briefly and rhetorically stated in these words, "should psoriatic persons marry?" My own view is that two persons suffering from fairly severe psoriasis should not marry; and it is doubtful whether marriage should take place between a psoriatic person and one who, although he or she appears to be normal, has near blood relations suffering from the disease. We must remember that there are degrees of severity of psoriasis. Some people's lives become burdensome owing to the repeated and severe efflorescences of the eruption; others scarcely suffer at all. Does the severity of a psoriasis depend on the inherited characteristics of the individual: on his environment or on his lack of adaption both mentally and physically to that environment, or on causes I have not mentioned?

Fat Metabolism

These matters appear to me to be ripe for discussion, particularly in view of the knowledge with regard to the disease which has been recently acquired. In discussing the matter we should remember that Grütz and Bürger[4] have recently shown that psoriasis patients have an abnormal fat metabolism.

If 100 grams of olive oil in which 5 grams of cholesterol have been dissolved are given to a man who suffers from psoriasis and a similar potion is given to a normal person, and if the blood of these subjects is examined at four, eight and twenty-four-hourly intervals after the drink has been taken, and the results are compared, the psoriatic will show an average of 40 per cent. increase in the total fat, cholesterol, and phosphatide content of his serum. In consequence, Grütz has suggested that a diet from which fats are almost completely excluded is a rational method of treating the disease. He recommends that the amount of fat eaten should be reduced to 20 grams a day for adults and 10 grams a day for children.

The reports with regard to this treatment are conflicting. Some authorities regard the diet as being beneficial; others have stated that the results are negligible. So much depends on the co-operation of the patient that it is difficult to assess the value of the treatment. In many cases the patient will not consent to the restriction of his fats unless he is treated as an in-patient; and once he has been removed to a hospital or nursing home the mental and physical trauma of everyday life are lessened, and this protection from his accustomed stresses is in itself beneficial, especially if the eruption from which he suffers is relatively acute.

Ultra-violet Light and Diet

In this discussion we should not forget the influence of climate on the disease. It is rare for an Englishman who suffers from psoriasis to show any manifestation of it whilst he is in a tropical climate; the psoriatic skin seems to require for its full health an abnormal amount of sunlight, and apropos of this I should like to ask if your experience agrees with mine that regular exposures to ultra-violet light are the best method of preventing recurrences of the eruption? In your experience, does regular exposure to the ultra-violet rays cause an immunity which persists, or do the exposures to the rays become less efficacious in preventing the disease after some months have elapsed?

I should like to leave this subject for one which is perhaps of more general interest, and to discuss briefly some common errors of diet which, in my experience, have contributed to the development and/or the persistence of cutaneous diseases. First, there comes the question of the meals which are commonly eaten. In my experience men are not so addicted to food faddism as women. We still enjoy our bacon-and-egg breakfast, the light luncheon in the middle of the day, and the heavy meal with its preponderance of proteins at night. And on this not-too-well-balanced regimen we manage to keep fairly fit. But, so far as the upper middle classes are concerned, the diet of the women is changing—or has changed. No longer does the lady of the house have the same breakfast as her husband; half a grape-fruit or some orange-juice, some thin dry toast, or rye bread, and a cup of tea or coffee suffice for her matutinal needs. For lunch she appears to enjoy lettuce, cheese, and biscuits or some similar light fare; while afternoon tea is now but a pale shadow of its former self. But at dinner she keeps pace with her husband. The result is that after one meal her stomach has to cope with approximately 60 to 70 per cent. of her daily nutriment. I have seen at least a dozen cases where rosacea or urticarial eruptions were attributable to this unbalanced ingestion of food, which have yielded readily to treatment when the patient learnt that it was better to spread her food intake over the three meals of the day rather than to consume at one sitting the major part of her sustenance. It would be interesting to know if other members of this Section have seen cases similar to these.

Alimentary Idiosyncratic Eczema

It is impossible in the time allowed to refer to the many interesting problems associated with over-nourishment and under-nourishment, although these could very properly be included in a discussion on the prevention of cutaneous diseases; similarly, it is impossible adequately to discuss the prevention of diseases by the elimination of certain foodstuffs from the patient's diet. I should, however, like to make brief mention of what has been called alimentary idiosyncratic eczema, for I believe that as our knowledge increases we shall be able to prevent a large number of cases of this nature, and if the theories I am going to lay before you to-day are correct it is already in our power, by adequate supervision, to prevent the development of many of these forms of eczema. Bloch[5] suggested three postulates which have to be fulfilled before it can be said that a given case of eczema is due to food allergy:

1. The eczema must be made worse by every ingestion of the suspected substance.
2. When the suspected food is withheld the eczema must disappear.
3. The allergic nature of the eczema must be proved by passive transference (Prausnitz-Kuestner reaction).

I think that most of us will agree that these postulates are fair, but it is often very difficult to ascertain that they are fulfilled. So far as infantile eczema is concerned the consensus of opinion seems to be that the majority of cases are due to alimentary idiosyncrasy; and many persons will say that the patient's family history usually reveals a tendency to allergic disorders. Some clinicians believe that the protein element in the diet, and particularly lactalbumin, is usually responsible; others inculpate the fatty elements; while in a few cases sugar has been shown to be the cause of the eczema.

I do not think that Urbach's[6] work has received sufficient attention in this country. He divides cases of infantile eczema into four groups: first, the over-nourished fat child whose eczema usually responds well if the amount of milk, whether from the breast or the cow, is reduced to normal proportions, and the patient is given gruel or groats for one of the feeds instead of milk. In the second category he places the dystrophic, marasmic, and poorly nourished infants. These children usually have the dry, disseminated type of eczema, and usually have gastric and intestinal disturbances. As soon as adequate treatment is given on the lines advocated by paediatricians (dyspeptic symptoms being combated by such measures as the giving of buttermilk, albumin-milk, etc., and the symptoms of enteritis checked by controlling the carbohydrate or fat intake) then the eczema begins to disappear. A certain number of these children suffer from under-nutrition, and here the diet has to be slowly increased until it is adequate. In the third group he includes the infants with exudative eczematoid eruptions who show crusted lesions on the scalp and face. These children usually have a dry skin and their eczema is frequently the first stage in the development of Besnier's prurigo. They are often so allergic to one of the constituents of milk that they may have to be brought up on gruel, cream of wheat, bananas, and, as soon as the teeth appear, small quantities of bread-and-butter and weak tea. In the fourth group Urbach places infants who have eczema but are neither under weight nor over weight, and have no exudative or atrophic tendencies; the cause of their eczema is frequently undiscovered, and only occasionally do they benefit from dietetic therapeutic measures. In all these types Urbach emphasizes that local treatment must be used as well as general treatment, and he admits, as we all admit, that "again and again failure has rewarded my sincerest efforts to help these children."

Biochemical Research

One of the greatest difficulties in dermatology in this country at present is that there seems to be a dearth of trained biochemists who have a sufficient knowledge of our subject to be of use to us. There is a tremendous field for biochemical research in dermatological problems, and I am sure that a concentration of biochemical and dermatological research on the problems of infantile eczema would result in the discovering of methods of preventing many of these forms of eczema. Talbot[7] and Shannon[8] have demonstrated that infantile eczema may result from sensitization to food proteins contained in the mother's dietary, and transmitted to the infant through the breast milk. Ratner[9] has shown that some babies are sensitized *in utero*. If we can discover by means more certain than a perusal of the family history that an infant is likely to develop what may be called endogenous eczema then the child can be kept under observation and passed to a wet-nurse instead of being put on to dried milk when its mother is tired of feeding it; and similarly other measures may be devised to prevent the onset of a disease which causes a great deal of discomfort to the baby himself and a great deal of distress to his parents.

Prevention of Occupational Dermatitis

In so far as the dermatergoses are concerned prophylactic measures fall into three categories:

1. The selection of employees.
2. The selection of materials, and
3. Active methods of prophylaxis.

First, with regard to the men, it would probably reduce the incidence of occupational dermatitis to a small extent if hyperidrotic subjects, persons who suffer from pityrosporon infections, and those who suffer from xerodermia, prurigo, hyper- and hypo-thyroidism, were excluded from entering dangerous trades. Certainly no one who had suffered from eczema in infancy or childhood, or who had an allergic diathesis, should be allowed to handle materials to which persons readily become sensitized. Hyperidrosis, in my opinion, is a very real disadvantage to a man who is handling, for example, cement or lime, and in a certain proportion of cases of occupational dermatitis that I have seen the patient has had this symptom.

Secondly, with regard to materials; every factory and every trade has its own problems with regard to these, but, to take only two examples, it is generally recognized in the french-polishing trade that men become more readily sensitized to turpentine-substitute than they do to pure turpentine; while in the chemical industry it is recognized that combinations of certain chemicals readily produce eruptions, while taken individually these chemicals are relatively innocuous. For example, in a personal communication Dr. Thelwall Jones of Widnes has told me that whilst chlorine and naphthalene alone seldom cause trouble, the fumes of chlorinated naphthalene are a potent source of "chlor-acne" if there is slackness in carrying out the efficient prophylactic measures that have been devised.

Active Prophylaxis

For the third consideration—active methods of prophylaxis—there is much that can be done. The first requisite is cleanliness. Other things being equal, it is the careless workman who leaves particles of dust or dried liquids ingrained in the folds of his skin who is more prone to become sensitized than the man who scrupulously removes the dirt from his hands. The men should be encouraged to wash their hands with a suitable soap when they leave work at midday for their dinner, and when they stop work in the evening. This is an apparently simple problem, but actually a difficult one. In one workshop

the manager informed me that on three occasions he had put up notices advising the men in respect of this matter. The men regarded this information as being a reflection on their personal habits, and every time the notice was put up it was surreptitiously removed within a few hours. A point which is obvious to us, but less obvious to the layman, is this: oils and grease, stains, etc., cannot be easily removed by soap unless the soap contains an excess of alkali, and perhaps some other chemical solvent, or grit. For obvious reasons it is useless to attempt to reduce the incidence of dermatitis by supplying the employees with a highly alkaline soap, the use of which softens the horny layer of the epidermis, and thereby assists the penetration of deleterious agents. But we are between Scylla and Charybdis in this matter, for the average man greatly prefers to use the soap which will cleanse his hands most rapidly, and if good soap is provided by an employer it is frequently unused. There have recently been put on the market some quite useful non-solid soaps which, if used before work is commenced, coat the hands with a thin layer of fat which, to a slight degree, retards the penetration of deleterious liquids, and may assist in facilitating the removal of dirt when the day's work is done. The application of lanolin to the hands at night is probably one of the simplest and most satisfactory prophylactic measures yet evolved.

There is a fortune awaiting the person who discovers a material which is as flexible as rubber and yet is untearable. At present, the use of gloves often produces what it seeks to obviate. I do not think I am betraying a professional confidence when I tell you that rubber gloves were supplied to some of the men who were working in the construction of the Mersey tunnel, an undertaking which necessitated the use of thousands of tons of cement. But the gloves tore, or the cement entered in some other way, and formed a poultice inside the glove, and the deleterious effect was thereby increased. This criticism necessarily applies to the use of gloves in many trades, other than cement working.

The use of sprays is increasing. Paint and varnish, which formerly were applied with a brush, are nowadays applied by means of high-pressure apparatus with a trigger control, and the number of commercial substances applied by sprays will probably greatly increase. The men who spray are notoriously careless. Consider, for instance, the cellulose sprayers; they remove their respirators whenever they think that they are not under the eye of authority; they do not drink their milk; they are frequently not punctilious about the efficiency of the suction fans which are supposed rapidly to remove the vapour from the atmosphere. In an ideal spraying plant each man works in a separate compartment with an adequate suction fan, so that he is not likely to be splashed by his fellow workmen; but even so, the vapour is diffused over the skin of the head, neck, and arms, and has the same possibilities of penetration as a fine dust. When it is remembered that in eight hours one man with a spray will handle as much paint as a man with a brush will handle in half a week, the necessity for adequate protection of the worker cannot be too strongly emphasized.

Conclusion

We can therefore conclude that so far as occupational dermatitis is concerned, the only prophylactic measures which are of practical importance are the restriction of the use of deleterious agents so far as is possible; the instruction of the employees so far as is possible in preventive measures; and the adequate ventilation systems in those factories where the atmosphere is dust- or vapour-laden. At present the prevention of occupational dermatitis by selection of employees is almost a council of perfection.

Before summarizing what has been said I would like to say that out of a vast range of subjects I have tried to choose those which may be of interest to general practitioners as well as to dermatologists; several very controversial issues have been opened in order to provoke a good discussion. You will remember that I began by suggesting that the science of preventive medicine was born in the sphere of diseases which have cutaneous manifestations; then we passed on to consider an inherited disease, psoriasis; and thereafter made some reference to the prejudicial effects caused by errors of diet. Then some very controversial work on the endogenous eczema of infants was discussed, and finally a few remarks were made concerning the prophylaxis of industrial dermatitis.

REFERENCES

[1] Montague, M. W.: *Letters of the Rt. Hon. Lady M——y W——y M——e*, London, 1763 (3rd ed.), ii, 60.
[2] Cockayne, E. A.: *Inherited Abnormalities of the Skin*, London, 1933, p. 357.
[3] Heiner, L. von: *Derm. Zeit.*, 1926, xlviii, 176.
[4] Grütz, O., and Bürger, M.: *Klin. Woch.*, 1933, xii, 373.
[5] Bloch, B., and Guy Prieto, J. A.: *Ann. de Derm.*, 1929, vi, 461.
[6] Urbach, E.: *Skin Diseases and Nutrition*; F. R. Schmidt's authorized translation, Vienna, 1932, p. 150.
[7] Talbot, F. B.: *Med. Clin. N. Amer.*, 1918, i, 985.
[8] Shannon, W. R.: *Amer. Journ. Dis. Child.*, 1921, xxii, 223; 1922, xxiii, 392.
[9] Ratner, B.: *Med. Clin. N. Amer.*, 1922, vi, 815; 1925, ix, 817.

The paragraphs on the prevention of occupational dermatitis are largely quotations from my article on "The Diagnosis of Occupational Dermatitis," *Journal of State Medicine*, 1933, xli, 10.

CERVICAL GLAND TUBERCULOSIS: THE CASE AGAINST SURGERY

BY

BRIAN C. THOMPSON, M.A., M.D.CAMB.

DISTRICT TUBERCULOSIS OFFICER, DURHAM COUNTY COUNCIL

Radical excision of tuberculous cervical glands is an operation performed less often to-day than thirty years ago. Surgeons in general seem disposed to favour conservative measures for certain types of the disease, reserving radical excision for localized glands in the upper deep cervical group, infected presumably by the naso-pharyngeal route,[8] where it is possible to remove also the tonsillar portal of entry. Extirpation of the disease entire is the usual aim, and some authorities[3 13] hold this to be the only justification for operation.

The practical objections to this ideal are obvious to anyone who has performed or watched the performance of a deep dissection of tuberculous neck glands, which are usually much more extensive than is clinically apparent. It is often difficult to decide where the disease ends and which glands may safely be left untouched; naked-eye appearances are unfortunately not infallible evidence of freedom from tuberculosis. Even the concurrent removal of tonsils and adenoids, 46 per cent. of which will exhibit microscopic tubercles,[19] takes no account of their lymphatic efferents; though actual tuberculosis of lymphatic vessels has never been demonstrated their fluid contents may hold living bacilli. It is therefore possible for even the most searching dissection to overlook some focus from which fresh disease may arise, and that this is common is suggested by the frequency of local recurrence after operation. Miller[8] found such local recurrence in 23 cases out of 89; and Clute[3] in 11 out of 43—that is, 26 per cent. in each series. Out of 83 patients operated on by Grey Turner[14] the disease recurred locally in 15 and in other situations in 4 (23 per cent.).

Recurrence Rates

I believe that close and prolonged observation after operation may show a much higher rate of recurrence. Minor glandular enlargements, possibly subsiding within

a few months or never becoming large enough to attract notice, may be definite evidence of recrudescence; yet a patient will easily overlook a small swelling or forget one that does not persist, and will gladly report years later that he has had no recurrence. I have observed 44 patients subsequent, and in many cases also prior, to operation for tuberculous cervical glands. The former were "notified" cases, while the latter were referred to the surgeon from the dispensary. Thus the dissociated work of several surgeons is represented, no single surgeon being responsible for more than six operations. The patients were all of the "hospital" class and the series is unselected. In every case complete radical incision was attempted, as opposed to such operations as incision and curettage.

In 39 cases the tonsillar group of glands alone was affected, in 2 the submaxillary and in 3 the glands in the posterior triangle (supraclavicular group). In 9 patients more than one operation was performed: 4 had one and 5 had two subsequent operations, and in all these cases diseased glands are still present. Of a total of 55 radical operations there was at some time or another a gross, palpable, local recurrence in 50 cases (91 per cent.). In 38 of these the recurrence became apparent within three months of operation, in 3 within nine months, and in 6 within five years. In every case it was reasonably certain that recurrence was due to spread from the initial focus, incompletely removed, rather than to a fresh exogenous infection. It is noteworthy that 18 of 36 patients observed immediately after operation—that is, 50 per cent.—had a persistent discharging sinus, which is presumptive evidence of residual infection.

Immediate Prognosis

Surgical extirpation, even if it were feasible (other considerations apart), is not necessarily desirable. Scrofula is seldom fatal. Blacklock,[2] investigating the primary focus in 333 children dead of tuberculosis, found the nasopharyngeal route responsible in only 6 cases (1.8 per cent.), and Smellie,[11] in 3 out of 182 cases (1.7 per cent.). Miller[9] states that a low-grade bacillaemia may develop in the disease, probably, as Krause suggests, "too early for therapeutic anticipation. Acute generalized tuberculosis is, however, quite rare. I have seen it only once, and this was two months after an excision operation (Case 44).

The immediate prognosis is therefore good. Remote extension may result in metastatic tuberculosis—for example, of bones or joints—but I saw this in a series of over 350 cases of cervical gland tuberculosis so infrequently as to regard its occurrence as quite exceptional. The chance of subsequently developing pulmonary tuberculosis is a point much debated. Fishberg[6] says that scrofula actually appears to confer immunity against phthisis, an opinion ultimately conceded by Wallgren also.[18] The proportion of phthisical patients giving a history of cervical adenitis varies between two extremes: 13 out of 67 according to Dunlop in Edinburgh,[5] and 20 out of 2,000 according to Wang in America. It is significant that the bovine type of bacillus, found in a proportion of cervical gland tuberculosis varying from 90 per cent. in Scotland to 25 per cent. in Germany,[8] occurs uncommonly (1 to 2 per cent.) in pulmonary tuberculosis. Whether or not primary cervical tuberculosis is a greater menace, immediate or remote, than the much commoner, usually subclinical, type in the mediastinum or mesentery, there is some evidence that its prophylactic eradication may be ineffective. Of 58 phthisical patients with a history of preceding cervical adenitis Cumming[4] found that 32 had undergone this operation.

He concludes that "surgical interference cannot therefore be said to be a factor in preventing the occurrence later of a pulmonary lesion, or of determining a more benign type of lung lesion. Indeed, the figures suggest rather the reverse."

Partial Excision

If complete removal of tuberculous cervical glands is unattainable in practice and theoretically without foundation, there remains a body of opinion in favour of partial excision, in the belief that "glands in other situations may improve with the removal of the main mass of the disease."[1] I am unable to support this contention from this present series of cases, the rapidity and grossness of recurrence in most of which suggested exacerbation rather than amelioration of the residual disease. It is maintained that local recurrence of this nature will in time subside, and Stanton and Richards[12] say that

"it is only when the cases are followed for relatively long periods that the remarkably good prognosis of the disease becomes apparent."

This observation is equally true of tuberculous glands which have never undergone operation at all: sooner or later they either shrink, fibrose and calcify, or break down, discharge externally, and ultimately heal. The process of cure may be as important to the patient as the end-result. It usually extends through adolescence and young adult life, when employment or matrimony may depend to some degree on personal appearance. The stigmata of scrofula are the more apt to arouse lay prejudice to-day by reason of their increasing rarity, and Clute[3] concludes that "a good cosmetic result is really the first consideration in treatment." Thus Grey Turner,[15] in a series of 73 cases, found the excision scars in 55 "good," in 14 "slightly defective," and in 4 "bad"; Clute, "excellent" in 29 cases out of 43; Hanford,[7] "completely satisfactory" in 92 out of 131.

Cosmetic Results

The cosmetic results in this series are considerably inferior. Compared with those of Grey Turner, for instance, they appear as follows:

Cosmetic Result:	Good	Moderate	Bad
Present series (43 cases) ...	21 per cent.	30 per cent.	49 per cent.
Grey Turner (73 cases) ...	75 ,,	19 ,,	6 ,,

The disparity between these two series does not necessarily represent a proportionately inferior technique in the group of surgeons responsible. Results of this type depend of necessity on esoteric standards. Beauty is proverbially in the eye of the beholder, and no two observers can be expected to agree as to what exactly constitutes a "good" scar. Objective factors also interfere, as the lapse of time from the date of operation, the complexion, age, and sex of the patient, and the range and illumination by which he is examined.

In order to check any personal bias and to average out as fairly as possible individual variables, I collected a series of 43 cases in which tuberculous cervical glands liquefied and broke down spontaneously, owing to neglect or refusal of treatment in the earlier stages, and compared the cosmetic results with those of surgical excision:

Cosmetic Result:	Good	Moderate	Bad
Surgical excision (43 cases) ...	21 per cent. (9 cases)	30 per cent. (13 cases)	49 per cent. (21 cases)
Spontaneous ulceration (43 cases)	30 per cent. (13 cases)	35 per cent. (15 cases)	35 per cent. (15 cases)

It is clear from these figures that the results of what may be termed natural cure, though often occurring under the worst possible hygienic conditions, are far from being calamitous, and may indeed be actually superior to those of expert surgery.

Table of Results

Case No.	Sex	Year of Birth	Year of Operation	Glandular Group	Operation	Residual Sinus	Local Recurrence	Interval	Cosmetic Result
1	F	1884	1896	L. T.	Excision	?	—		Bad
2	M	1924	1933	L. T.	,,	—	+	2 years	Good
3	F	1897	1919	B. S.	,,	?	+	17 years	Moderate
4	F	1927	1931	L. T.	,,	+	+	4 years	,,
5	M	1912	1932	L. Pt.	,,	—	+	6 months	Good
6	F	1919	1935	L. T.	,,	+	+	Immediate	Moderate
7	F	1920	1934	R. T.	1. ,,	+	+	,,	Bad
			,,		2. Curettage		+		
8	M	1926	1934	L. T.	Excision	—	+	,,	Moderate
9	F	1915	1934	R. T.	,,	—	+	6 months	Good
10	M	1927	1935	L. T.	,,	—	+	3 months	,,
11	F	1923	?3	B. T.	,,	?	+	Immediate	Bad
12	F	1921	1933	R. T.	,,	—	+	,,	,,
13	F	1932	1934	L. T.	,,	—	—		Good
14	F	1911	1931	R. T.	1. ,,	?	+	,,	Bad
			,,	,,	2. ,,	?	+	,,	
			,,	R. Pt.	3. ,,	?	+	,,	
15	F	1911	1930	L. T.	1. ,,	?	+	,,	
			,,	,,	2. ,,	?	+	,,	
			1931	R. T.	3. ,,	?	+	,,	
16	F	1916	1935	R. T.	,,	+	+	,,	Moderate
17	M	1926	1934	R. T.	1. ,,	+	+	,,	Bad
			,,	,,	2. ,,	?	+	,,	
			1935	,,	3. ,,	?	+	,,	
18	F	1916	1935	L. T.	,,	+	+	,,	,,
19	M	1905	1923	B. S.	,,	?	+	5 years	Moderate
20	F	1929	1935	R. T.	,,	—	+	Immediate	Good
21	F	1919	1934	L. T.	1. ,,	+	+	,,	Bad
			,,	,,	2. ,,	—	+	,,	
			1935	,,	3. ,,	+	+	,,	
22	M	1921	1934	L. T.	,,	—	—		Moderate
23	F	1922	1931	L. T.	,,	?	+	3 years	Bad
24	F	1928	1935	R. T.	,,	+	+	Immediate	,,
25	M	1930	1934	L. T.	1. ,,	+	+	,,	,,
			1935	,,	2. ,,	+	+	,,	
			,,	,,	3. Curettage		+	,,	
26	M	1932	1934	L. T.	Excision	+	—		Moderate
27	M	1924	1933	R. T.	,,	+	+	2 years	,,
28	F	1925	1932	L. T.	,,	?	+	Immediate	,,
29	F	1913	1934	R. Pt.	,,	—	+	9 months	Good
30	F	1905	1934	R. T.	,,	—	+	Immediate	Moderate
31	F	1921	1934	L. T.	,,	—	+	3 months	Bad
32	F	1912	1924	R. T.	,,	?	+	10 years	,,
33	F	1920	1935	R. T.	,,	+	+	Immediate	,,
34	M	1922	1931	L. T.	,,	—	+	,,	,,
35	M	1912	1931	R. T.	1. ,,	+	+	,,	,,
			1932	R. T.	2. Curettage		+		
36	F	1923	1935	R. T.	Excision	+	+	,,	,,
37	F	1921	1934	R. T.	1. ,,	—	+	,,	,,
			,,	L. T.	2. ,,	—	+	,,	
38	F	1909	1931	L. T.	,,	?	+	,,	Moderate
39	F	1926	1934	R. Pt.	,,	—	—		Good
40	F	1902	1910	R. T.	1. ,,	?	+	10 years	Moderate
			1920	R. T.	2. ,,	?	+	Immediate	
41	F	1906	1923	R. T.	,,	+	+	5 years	Bad
42	F	1915	1935	L. T.	,,	+	+	Immediate	,,
43	F	1925	1936	L. T.	,,	—	+	,,	Good
44	F	1932	1934	B. T.	,,	?	+	(died 2 months later of meningitis)	

R. = Right. L. = Left. B. = Bilateral. T. = Tonsillar. S. = Submaxillary. Pt. = Posterior triangle.

This is not to suggest that every case of tuberculous adenitis should be allowed to go untreated.

I have established a routine for dealing with the disease according to its clinical stages, based on comparative results obtained by different conservative measures in common use.[16 17] When the glands are in the earliest or hyperplastic stage, syrup. ferri iod. is given by mouth. When periadenitis is present, without softening, tuberculin is given by subcutaneous injection. Different tuberculins have been used, each requiring different technique; I have recently employed "tuberculin P.P.D.," a comparatively new preparation, with good results. The disease can usually be arrested when these methods are adopted in the earlier stages. If a cold abscess has formed, either aspiration or incision with drainage is performed, according to indications described in a previous paper, in which the cosmetic results were shown to be very much better than those of surgical excision.

Though treatment on these lines may have to be prolonged over months or even years, it is almost always ambulatory; the patient attends the dispensary when required and need never be absent from work or from school save for this occasional half-hour, which, in my experience, is seldom grudged. On the other hand, the stay in hospital for a surgical operation, often urged as a saving of time,[3] is actually a period of complete disablement which is no guarantee of the future. Nor are the risks of operation negligible: though the operative mortality is small,[13] injury to nerves occurs not uncommonly during extensive dissections, and of Hanford's 131 cases 13 (10 per cent.) were left with permanent paresis.[7]

Summary

1. Personal observation of 44 patients has led to the conclusion that tuberculosis of the cervical glands is seldom, if ever, completely removed by surgical means, and that so-called "radical excision" is in practice usually a partial operation.

2. This partial excision can only be justified if proved by results to be superior to other methods of treatment. The high rate of local recurrence and the degree of permanent disfigurement due to cicatrization found in this series of cases indicates the reverse. It is also shown from the figures of other observers that the operation does not prevent the subsequent development of pulmonary tuberculosis.

3. Additional disadvantages are the inconvenience caused to the patient by hospitalization, the frequent necessity for repeated operations, and the risk of paresis from nerve injury.

4. It is held that conservative treatment has none of these disadvantages, and ultimately produces results in every way more satisfactory.

References

[1] Barrington-Ward, L. E.: *Lancet*, 1933, i, 1193.
[2] Blacklock, J. W. S.: *Brit. Journ. Tuberc.*, 1935, xxix, 69.
[3] Clute, H. M.: *Ann. of Surg.*, 1927, lxxxvi, 666.
[4] Cumming, W. M.: *Tubercle*, 1933, xiv, 259.
[5] Dunlop, D. M.: *Edinburgh Med. Journ.*, 1930, xxxvii, 202.
[6] Fishberg, M.: *Pulmonary Tuberculosis*, Philadelphia, 1932, vol. ii, p. 31.
[7] Hanford, J. M.: *Surg. Clin. North America*, 1933, xiii, 301.
[8] Miller, R. D.: *Tuberculosis of the Lymphatic System*, New York, 1935.
[9] Krause, A. K.: *Amer. Rev. of Tuberculosis*, 1924, ix, 87.
[10] Opie, L., and Aronson, J. D.: *Arch. Path. and Lab. Med.*, 1927, iv, 1.
[11] Smellie, J. M.: *Birmingham Med. Rev.*, 1930, v, 13.
[12] Stanton, E. M., and Richards, G.: *Journ. Amer. Med. Assoc.*, 1934, i, 1214.
[13] Tanner, W. E.: *Modern Operative Surgery*, 1924, p. 453.
[14] Turner, G. Grey: *British Medical Journal*, 1922, i, 352.
[15] Idem: *Newcastle Med. Journ.*, 1931, xi, 145.
[16] Thompson, B. C.: *Lancet*, 1936, i, 946.
[17] Idem: *Brit. Journ. Tuberc.*, 1936, xxx, 84.
[18] Wallgren, A.: *Beitr. z. Klin. d. Tuberk.*, 1922, l, 464.
[19] Webster, R. A.: *Med. Journ. of Australia*, 1932, i, 351.

HOMEWORK*

BY

WILLIAM BROCKBANK, M.A., M.D., M.R.C.P.

MEDICAL OFFICER, MANCHESTER GRAMMAR SCHOOL; HONORARY ASSISTANT PHYSICIAN, MANCHESTER ROYAL INFIRMARY

This paper is based on my seven years' experience as medical officer at Manchester Grammar School, a school with a national reputation for hard work, and one probably accused more than most schools of overworking its boys.

The question of homework looms large in the public eye at the moment, and a great deal of nonsense has been talked and written about it in an endeavour to show that it is a useless and harmful tyranny. Yet the vast majority of parents and (this may seem strange) the vast majority of boys working for matriculation and the higher school examinations are in favour of it, regarding it as a rather regrettable necessity if they are to pass their examinations and acquire necessary scholarships. Members of the teaching profession, and they should know, are emphatic that it is an essential part of education, and although a lot of gibes have been hurled at them to the effect that they have not to do it, yet they have to spend many weary hours correcting it. It ought not to be forgotten that the quick and clever boy enjoys exercising his powers; that often homework is interesting to do. The great point is that it is work done by the boy himself with, or better still without, some slight unskilled help from his parents. The boy is thrown on his own resources, and the work is therefore individual as contrasted with the work done during the day in collaboration with the teacher. In doing homework, therefore, a boy finds his limitations and—even more important—may discover his potentialities.

It is said that homework should be done at school in the form of "preparation," and that school hours should be correspondingly longer; the day school would then be working on the pattern of the boarding school. But there are many serious objections to such a proposal. Homework, on the other hand, has substantial advantages. In the first place, a day school boy doing homework learns to work by himself—that is, he learns the art of private study. A boarding school boy only learns to work under the eye of a master, and rarely, if ever, encounters private study until he has matriculated. He therefore tends to be handicapped in his competition with the day school boy. Moreover, many boarding schools do not press their boys to work, for they are dealing with those who have no economic cares in front of them. They can afford to let a boy go on until he is 17 before he matriculates. In the second place, a day school that is worth while attending has many outside activities, both sporting and highly educational, timed to start at the end of school: debating, dramatic, scouting, music, model railway, literary, scientific, and many others. If "prep." had to be done at school these would have to be discontinued. Whereas in a boarding school work is spread throughout the day from such times as 7.30 a.m. to 8.30 p.m., the work at a day school would be crammed in between some such hours as 9.30 a.m. and 5.30 p.m. Is that good for the boy?

Teachers and Parents

I would admit at once that some masters are inclined to set too much homework, but taking them all round they are very fair; and here let me say in passing that it is the hard-working master who sets the most homework. The lazy one will set little or none, and there

*Read in the Section of Medical Sociology at the Annual Meeting of the British Medical Association, Oxford, 1936.

are often complaints about this! But the question of quantity presents many difficulties ; if they set the right amount for the average boy in a given form they will get complaints that they set too much from the parents of the slower boys, and they will also get complaints that they set too little from the parents of the cleverer boys. These latter do not matter much, and can be encouraged to develop collateral reading, but the difficulties of the slow boys are important. They can be removed by getting the boy in the right division of the form and giving the parent the right of initialling the homework at the end of a stated time and assessing the marks on the work done. Many parents and boys are, unfortunately, loath to do this.

Some parents are oddly unreasonable. One of the hardest-working boys I know deliberately arranges his homework so that he can go to a Hallé concert on a Thursday night, the school dramatic society and scouts on a Friday night, and often a theatre as well. He makes up for this by doing extra homework at the week-end and his mother grumbles, quite forgetting that he takes three evenings a week off for entertainment!

Is Homework Harmful?

I have had very few complaints from either boys or parents that homework has affected a boy's health and physical condition, and from my own observation I am quite satisfied that it does not. Our boys are almost without exception thoroughly happy, and where they are not, it is from causes other than homework. Such high spirits are quite incompatible with overwork, but occasionally a proper complaint has been received in the case of a delicate boy, and the necessary adjustments have been made. Occasionally, too, a master will notice a strange lifelessness and listlessness in a boy, or he may, if he is good at his job, observe that his work and, in particular, his essays, are losing their resilience and contain an unusual number of mistakes. It is my business to find out the cause of this, and sometimes homework is a predisposing factor.

I am told from time to time by parents that their boys take too long over homework. Inquiry will often elicit the fact that the boy is working in a room in which a wireless set is in operation or in earshot. Sometimes he is expected to work in the company of younger brothers and sisters who are romping about. Such troubles have been cured without difficulty by the co-operation of the parents. This means that a special room has to be set apart and warmed for the boy, and this extra expense is definitely impossible in poor households, and in Manchester, at any rate, some children have to go to the public libraries in search of quiet.

The most serious cases that have cropped up have all occurred in boys working for scholarships or the higher examinations, and without exception they have been studying far longer than was advisable or necessary. One boy came to me because he could not concentrate on his work, although he had to sit for a vital scholarship examination in five weeks' time. If he had had to sit at the time he came to me he said he would have failed miserably. Inquiry revealed that he was working until midnight and getting up at 6.30 a.m. to do more work. Reference to his form master revealed the fact that the boy was more or less certain to get his scholarship even if he did no more work at all. The master was astonished and horrified to learn what had been going on. Here again the cure was simple. A fortnight's holiday and more reasonable hours put him right, and he duly won his scholarship. Incidentally it took the form master and myself quite a considerable time to convince the boy of the wisdom of our advice. I think that it should be pointed out that this excessive zeal is really a virtue in the boy ; there are just as many who are incapable of spurring themselves on to work although they know that their career depends on it. They definitely do too little work.

Parental Pressure

Then there is the boy who is overworked because of pressure from his parents. I am not sure if this is not the most serious of all. It may have two effects: either the boy gets his school certificate too early, at, say, 14, and then collapses mentally, or else he becomes worried and loses health. In both cases the effect is not so noticeable physically as mentally, and he fails to respond to the stimulation and freedom of a sixth form.

A dozen other boys have come to me from time to time to ascertain the cause of their loss of stamina and, in consequence, their athletic prowess. In each case it was the same story—lack of sleep—and each rapidly responded to the simple treatment of going to bed at 8 p.m. for a fortnight, followed by a gradual return to a more reasonable hour. Here again both the master and I had to convince the boy that it was in his own interest to discontinue homework for a time. One of these lads surprised everybody (and I think himself) by winning the athletic cup four or five weeks later. You will observe from what I have said that the diagnosis rests on the history as given by the boy, master, or parent. Physical signs, apart from a tired appearance, are absent, and cardiac efficiency tests are always normal.

Lack of Sleep

It is only fair to mention that very often lack of sleep is caused not by homework but by the boy not being able to settle down to it and so wasting time. A boy *must* sacrifice a good deal of pleasure if he is going to get on. A great many boys want to get on, but have not the determination to stick steadily at their work : they get worried when the time comes near, but the real cause is not overwork.

It may amuse you to know that each year I am invited by a sixth form master to debate with his form the question of the appropriate amount of time that should be spent on homework. He came to me because his boys take longer than he thinks advisable, and he bemoans the fact that they will not believe him when he tells them this is the case. So for the last three years I have been brought in to deal with the matter from the medical standpoint, and I assure you that it is very difficult to convince them of the seriousness of overwork.

Late nights naturally leave a tired brain, and therefore work takes longer to do next day, and a vicious circle is set up of a particularly pernicious type. But it is confined to boys dependent on examination results for scholarships and bursaries, without which a university education becomes impossible. It is not the schoolmaster who is responsible, it is the whole educational system that is at fault. Masters are agreed that the standard demanded by the matriculation examination is too high, and the subjects unsuitable for the average boy. They are united in their request for an examination quite independent from that set up by the universities for their own needs. If this is done, education would become less of a cram course, but even this would not help the more serious cases I have quoted to you. In the North there are many boys who are out to make their way, yet it has been seriously suggested that these boys should be punished for overwork. Needless to say that suggestion came from the parents of the slower boys. I sometimes think that many fathers and mothers are over ready to complain of too much homework when the boy is young,

and then to grow nervous when he gets in the matriculation form, when it is too late to do anything if he is much behind.

The Solution

Surely the solution is moderation and common sense. Ease the burden of the average boy. Train the studious boy to understand the perils and pitfalls of overwork. Keep a careful watch on the individual boy who is suffering from the system, and when he is spotted see that there is close collaboration between school and parent. See that the staff do not intentionally or accidentally expect too much of their boys, but do not abolish homework. Let them be taught the art of private study. Do not damp down the ardour that so many boys show for their work, and do not discourage the many boys who are desperately anxious to educate themselves to the best of their abilities.

Clinical Memoranda

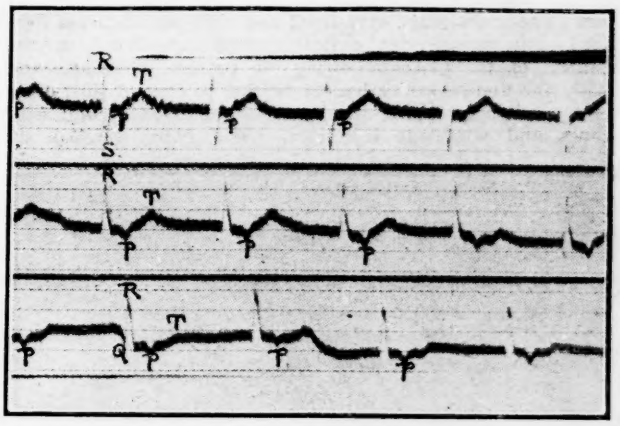
Auriculo-ventricular Nodal Rhythm following Administration of Quinidine in Auricular Fibrillation

A schoolmistress, aged 51, was readmitted to the Royal Sussex County Hospital on April 18th, 1936. She had been in hospital five years previously, from March 20th to May 6th, 1931, and after discharge had continued to attend as an out-patient for *x*-ray therapy, the total length of such treatment having been eighteen months. Up to the summer of 1935 she thought she was making steady progress, but for the last nine months or so she had been going back, her chief symptom being palpitation, and she had been gradually losing weight. Her weight on readmission was 8 st. 7 lb., while on her previous discharge she had weighed 10 st. 1 lb. She had obvious exophthalmos, fine tremor of the hands, and was fibrillating with a ventricular rate of 105 which rose to 140, but settled down to 80 within a week on rest in bed, a bromide and digitalis mixture, and Lugol's solution. The basal metabolic rate was plus 33 per cent. The whole thyroid gland could be seen and felt, but was hard to the touch, had no thrill or murmur over it, and was quite unlike the ordinary soft vascular toxic goitre of Graves's disease. In addition there was a nodule the size of a hazel-nut in the middle line over the cricoid cartilage, movable and apparently not adherent to the isthmus, and it seemed that activity of this outlying nodule might be the cause of her set-back. On May 5th this nodule was excised under local anaesthetic by my surgical colleague Mr. H. Nethersole Fletcher. On May 11th Dr. L. R. Janes reported:

"Section shows a colloid adenoma with hyperplastic gland alveoli, excess of lymphoid tissue, and increase of interlobular fibrous tissue. In addition a small true thyroid adenoma, composed for the most part of solid alveoli, but a few small colloid-containing acini are also present. There is no evidence of malignancy."

She made a good convalescence from the operation and gained 3 lb., but it was disappointing to find on May 29th no improvement in the basal metabolic rate. That result, however, was thought to be fallacious, for owing to nervousness she was a bad subject. The fibrillation persisted and it was felt right to attempt to benefit her further by restoring normal rhythm if possible. Accordingly tabloids of quinidine sulphate 0.2 gram were given, one on June 2nd, two on June 3rd, four on June 4th, six on June 5th, eight on June 6th, and ten on June 7th, on which day regular rhythm was regained with a rate of 60, the patient herself being aware of the change. The daily dose of quinidine was then lowered to and maintained at 0.6 gram.

The following day, June 8th, she was electrocardiographed again, when it was found that the fibrillation had been replaced by auriculo-ventricular nodal rhythm, the inverted auricular P waves falling between the R and the T waves of the ventricles and being clearly seen both in



Lead II and in Lead III. Three subsequent electrocardiograms were taken, and, apart from one short paroxysm of fibrillation, there was no change up to her discharge from hospital on June 27th. I can find no such result (or sequel) of quinidine recorded in the literature.

On July 10th I saw her at her home in consultation with Dr. E. W. Lindeck, and electrocardiographed her there. This showed reversion to sino-auricular rhythm, with a normal P-R interval and rate 100.

DONALD HALL, M.A., M.D., F.R.C.P.,
Senior Physician and i/c Department of Electrocardiology, Royal Sussex County Hospital, Brighton.

Full-time Extrauterine Pregnancy

As these cases are of considerable rarity I send the following details regarding a case that came under my care recently.

CASE HISTORY

The patient was a Mohammedan aged 15 years and a primigravida. I saw her first at the ante-natal clinic where she was diagnosed as a breech (R.S.A.). The patient said she was full-time, but the size of the foetus suggested an eight-months pregnancy. An attempt to perform external version was unsuccessful, so the patient was recommended admission to hospital. In taking the case history it was ascertained that when ten weeks pregnant the patient had an attack of severe abdominal pain with bleeding from the vagina lasting two days. These symptoms subsided on treatment by the local midwife (untrained). Again at the seventh month she had bleeding lasting for six days, but this time there was no pain.

The patient was poorly nourished and badly developed. She was admitted to hospital on August 24th, 1935, and another attempt made to turn the foetus, but without success. On August 25th pains started but no contractions were felt. These pains were definitely like labour pains in character, being spasmodic. They passed off, and again on September 6th at 6 a.m. the patient had pains with no contractions, and this time there was a definite blood-stained "show." P.V. showed that the cervix was soft, elongated, and closed. It suggested the cervix of a three-months pregnancy rather than a full-time one. The body of the uterus was not defined. On September 8th there were no pains or show. The foetal movements could be seen and the foetal parts could be easily felt. The foetus appeared more active than on other days and the patient corroborated this finding. The position was still R.S.A. and the foetal heart sounds were good.

It was at this point that extrauterine pregnancy was diagnosed. On September 10th an *x*-ray picture was taken by the kindness of the King George Hospital radiologist, and the report was "Full-time foetus in breech position." The following morning the patient was prepared for abdominal operation. The abdomen was opened by a mid-line incision and a full-time female child was found in its sac in the abdominal cavity. The membranes were found to be densely adherent to the omentum and the anterior abdominal wall, and the placenta was attached to the left tubo-ovarian junction. The membranes were freed and their attachments ligatured, but considerable difficulty was experienced in the removal of the placenta owing to profuse bleeding, and finally the uterine artery had to be tied to control this. The patient collapsed during the operation but came round with salines and stimulant injections. The baby weighed six

pounds, and though born alive only survived fifteen minutes. The patient developed a stitch abscess, but apart from that made an uninterrupted recovery.

COMMENTARY

A point of interest is the help the *x*-ray plate gave to the diagnosis. By abdominal palpation the foetus seemed smaller as compared with a normal full-time foetus palpated through the thickness of the uterine wall, and the *x*-ray showed that it was full-time.

There are three possible diagnoses: (1) tubal rupture; (2) tubal abortion with secondary abdominal pregnancy; (3) primary abdominal pregnancy. The first, in spite of the history, seems unlikely as there were no pelvic adhesions or signs of inflammatory condition such as would follow an internal haemorrhage, and there was no evidence of a pelvic haematocele. With a tubal abortion also one would expect to find signs of old haemorrhage in the pelvis. So possibly the last diagnosis was the correct one and the case was a primary abdominal pregnancy.

I am grateful to Dr. Harbord for her assistance at the operation and in treatment of the patient.

M. WINIFRED ANDERSON, M.B., Ch.B.Glas.
Kinnaird Hospital, Lucknow.

Reviews

LEGAL PROBLEMS IN MEDICAL PRACTICE

To the great advantage of the medical profession, Mr. D. HARCOURT KITCHIN, barrister-at-law, contributed to these pages during recent months a series of articles on the legal aspects of the many incidents with which every general practitioner is liable to be confronted, and these have now been reprinted under the title of *Legal Problems in Medical Practice*,[1] in which form they are, if possible, even more acceptable than when "serialized" in this *Journal*. Mr. Kitchin has condensed his material very severely, yet without sacrifice of anything essential to the presentation of the various important matters with which he deals. He does not, of course, attempt to write an abbreviated textbook of forensic medicine in general—toxicology, for instance, is wholly omitted—but there are few common contacts of general practice and law that he does not deal with clearly and adequately. Among the most useful of the sections of the book are those which explain the fees which can properly be claimed by medical witnesses before all sorts of courts and in all sorts of circumstances, and how to ensure their due receipt by those entitled to them; the sole omission under this heading is that there is no mention of the varying fees for the notification of infectious diseases, perhaps because it is assumed that every practitioner knows them. Possibly because of his decision to eschew toxicological medicine, the author does not discuss the thorny question of tests for drunkenness or for the state of being under the influence of drink.

It is constantly obvious that Mr. Kitchin keeps fully abreast of recent decisions and recent practice, and that he is a careful student of the annual reports of the medical defence societies, which many practitioners read every year with as much zest as they read a detective story. He notes with approval the effective method recently adopted by the Medical Defence Union in dealing with the writers of offensive libels—namely, proceedings under Section 25 of the Summary Jurisdiction Act of 1875. This, we fancy, was an inspiration of Mr. Oswald Hempson's. On the subject of medical privilege he is also very clear and very interesting; and he tells us that the State of Victoria has already by legislation afforded to registered practitioners there the same right as lawyers have all over the Empire of refusing to divulge professional confidences. On the subject of borrowing money in order to pay for the purchase of a medical practice, or of a share in one, Mr. Kitchin is helpful; but as he wrote before the events of the last few weeks he could not know that the British Medical Association was about to take this matter in hand and to conclude arrangements which should entirely stop the exploitation of the profession in this respect by moneylenders and other agents. In fact, all the chapters on the sale of practices, engagement of locumtenents and assistants, and on partnerships in general are full of valuable information. The author's one slip, beyond two or three rather careless misprints, is the statement that the statutory Notification of Birth has to be made to the Registrar, whereas it is in fact to the Medical Officer of Health that the information has to be sent. The book has a most pleasing format, is easy to read, brief and to the point everywhere: it can be recommended with the greatest confidence to practising medical men and women.

[1] *Legal Problems in Medical Practice*. By D. Harcourt Kitchin. London: E. Arnold and Co. 1936. (Pp. 232. 10s. 6d. net.)

ANTE-NATAL AND POST-NATAL CARE

The rapid development of ante-natal care during the last few years has created a need for information on this important aspect of preventive medicine. Dr. R. KELSON FORD has written *A Short Ante-natal and Post-natal Handbook*,[2] and it is a little difficult to understand why post-natal care is included. The book is short, well printed, and readable, and contains little which will occasion disagreement. It is, however, doubtful whether many obstetricians will agree with the statement that the coccyx, if dislocated or fractured, should be removed before labour or that the mother should be encased in a binder reaching well down her thighs for the first few days of the puerperium.

Our main criticism of this book is that it contains little or nothing which is not included in a standard textbook on midwifery. No information is given as to how an ante-natal clinic should be run, how often the patient should be seen, while the only remark about blood pressure is that an ante-natal bed should be provided if the systolic blood pressure reaches 160 mm. Hg and the diastolic 100 mm. Hg. In discussing contracted pelves the author writes: "These conditions are so fully described in all textbooks that it is unnecessary to do more here than to attempt to sum up the treatment." The main criticism of ante-natal clinics is that they have led to an increase of unnecessary operative intervention, so that a close consideration of when not to diagnose contracted pelvis is highly desirable in a book dealing with ante-natal care. Seven lines are devoted to syphilis, and yet in many centres anti-syphilitic treatment has to be carried out by the ante-natal officer.

DISEASES OF THE MOUTH

In compiling their work on *Diseases of the Mouth*[3] Drs. PRINZ and GREENBAUM have aimed at gathering together the enormous mass of scattered information on the subject and evaluating carefully these numerous publications according to their intrinsic merit. They have endeavoured also to combine the points of view of the physician and of the dentist, realizing that the general practitioner is in constant need of reliable information about many borderline conditions. Very little of value can have escaped the authors' scrutiny, and their wide experience, both of teaching and of practice, renders their choice of material the more valuable.

The book begins with short chapters on the embryology and anatomy and physiology of the oral cavity, the uses of teeth, examination of the oral cavity, oral symptoms, oral hygiene, and so on to the special diseases of the mouth, and to oral manifestations of general diseases. It is of interest to find that the authors conclude that mastication by a very defective set of teeth, by edentulous jaws, or by a complete set of artificial teeth makes very little difference to digestion. "Focal infection" occupies only a few pages, but it is by no means belittled by brevity: in particular, we note that "curettement of the socket, in the greater majority of cases, is contra-indicated." In the remarks on congenital syphilis we note the excellent illustration of Hutchinsonian molars (Moon's molars originally), but the authors seem not to have observed a similar condition of bicuspids and canines. The photograph of a case of cleft of mandible, lip, and tongue is another outstanding illustration. The note on rumination ending "In one instance a governess taught it to two children" adds something of piquancy to the book, while the historical sense is also frequently appealed to, though we may suspect that Celsus was referring to something more serious than present-day aphthae when he said "they often lead to death in children."

In the more purely dental sections we note the subdivision of pyorrhoea into the horizontal and vertical types—a distinction which we think will not stand the test of time. Contrary to the general teaching, the authors believe that staphylococci are primarily responsible for the pyorrhoea. We wonder what the "temporary genuine hypertrophy of the gingivae," which they state is commonly observed during pregnancy, really is: can it be any more a distinct disease than the gingivitis of pregnancy to which they devote a few lines? The book is well and plentifully illustrated, and there are but few printers' errors. It is worth a place in the practitioner's library.

MEDICAL HISTORY OF CONTRACEPTION

This solid treatise,[4] which has a preface from Sir Humphry Rolleston and a foreword from Dr. Robert L. Dickinson, must have involved an immense amount of work. Dr. NORMAN E. HIMES shows that a wish to limit fertility is older than civilization, but that efficient and unrepugnant means of fulfilling the wish have been long in coming. In the first section he examines the methods practised by pre-literate societies, and shows that they consist partly of expedients which, if sometimes horrible, may be effective (for example, subincision), and partly of magical rites. In the second part Dr. Himes examines the writings of the ancient civilizations. In dealing with Graeco-Roman civilization he confines himself to professional writers, speaking with particular enthusiasm of the work of Soranos. He has not made a special study of the so-called erotic writers, but suggests that an examination of them might be of value. This seems likely. Dr. Himes's story of later periods shows that it is not in orthodox professional writings one would expect to find revealed the sexual habits of the people. When one recollects how much erudition was expended by early commentators upon every line of "classical" literature it is likely that such a passage as the following (Juvenal, VI, 592 *et seq.*) has stimulated the Scaligers to collect many other references:

> "Hae tamen et partus subeunt discrimen et omnes
> Nutricis tolerant fortuna urgente labores:
> Sed jacet aurato vix ulla puerpera lecto.
> Tantum artes huius, tantum medicamina possunt,
> Quae steriles facit atque homines in ventre necandos
> Conducit."

The author next reviews the contraceptive techniques of Eastern cultures, of Islam, and of Europe in the Middle Ages. European folk beliefs are then described. A separate chapter is given to the history of the condom, of which the annual production in the United States is now said to amount to 317 millions. The fifth part contains a lucid account of the birth control movement in the United States and England from the time of Francis Place onwards. The last section contains statistical information derived from birth control clinics, and a discussion of the demographic consequences. Dr. Himes, like the vast majority of economists and vital statisticians, has no doubt that the birth rates of most civilized countries have declined on account of the popularization of birth control. In an exhaustive study of scientific opinion account would need to be taken of the views of the late John Brownlee and of Mr. Udny Yule. There is surely evidence of variations in fertility before the days when contraceptive methods were generally available. One of the difficulties in interpreting discordant statistical results is the impossibility of proving a negative. Dr. Himes, for in-

[2] *A Short Ante-natal and Post-natal Handbook.* By R. Kelson Ford, M.D., M.M.S.A. London: H. Milford, Oxford University Press. (Pp. 141. 6s. net.)

[3] *Diseases of the Mouth and Their Treatment.* By Hermann Prinz, S.M., D.D.S., M.D., D.Sc., and Sigmund S. Greenbaum, B.S., M.D. London: H. Kimpton. (Pp. 602; 287 figures; 11 coloured plates. 42s. net.)

[4] *Medical History of Contraception.* By Norman E. Himes, Ph.D. London: G. Allen and Unwin Ltd. 1936. (Pp. 521. 25s. net.)

stance, gives some space to an attempt to explain away the late Edgar Sydenstricker's evidence that in American women living in a rural area of Western New York fertility was not declining between 1900–10 and 1920–30. Some years ago (*Eugenics Review*, October, 1920) Brown, Greenwood, and Wood, in a study of the fertility of English middle-class women, found that, even when sterile unions were excluded, the fertility of "limited" families was not less than that of "unlimited" families. As they noted, it was difficult to be sure that the comparison was fair. It is, indeed, impossible to secure a comparison of married couples *in pari materia* in all respects except the user or non-user of contraceptive methods.

The hackneyed eulogy, that it is a mine of information, can fairly be applied to Dr. Himes's book.

AN INTRODUCTION TO MEDICAL PRACTICE

It is a little difficult to know exactly what, or how much, it is necessary to tell the newly qualified medical practitioner about his attitude to practice, especially to general practice, about the business of establishing himself, and about his conduct to patients and to his fellow practitioners. Some general advice on these matters is usually welcome, and certainly a knowledge of the practitioner's relationship to legal requirements and to other practitioners is quite essential. A small book supplying material of this kind for young American doctors, entitled *The True Physician*,[5] has been written by Dr. WINGATE M. JOHNSON, an experienced general practitioner of Winston-Salem in North Carolina. All the advice that it contains is quite simple and very sound and good. Nearly all of it would apply to conditions in this country as well as those in the United States of America; but it is all very elementary (as perhaps it should be), and some of it seems a little curious or superfluous. It gives some strange sidelights on American practice: for example, "It is true that in too many instances hospital staff appointments are obtained through political pull," and "One of the most frequent mistaken diagnoses aired in the courtroom is that of operating on a pregnant woman for a fibroid tumour of the uterus." The "Principles of Medical Ethics of the American Medical Association," which the author sets out in full, are interesting and deal with certain matters admirably, but they contain much which it would not be considered necessary to formulate so exactly here. The author has the temerity to insert a chapter on the physician's reading, and to give a list of sixteen books which he recommends for such reading. It is an extraordinary list, though naturally headed by the Bible and the works of Shakespeare, and containing writings by Plato, Sir Thomas Browne, and Sir William Osler. His boldness in extending the list must be acknowledged, though his wisdom and judgement may be doubted: nor will everyone agree with his dictum that "We doctors should have a kindly feeling for Shakespeare, since his doctors were always fine characters."

Nevertheless Dr. Wingate Johnson has entirely the right conception of what the family doctor should be, of the qualities he should have, and of the line of conduct he should pursue, and his book should succeed in conveying this to the readers for whom it is primarily written. He insists that the practitioner should be a man of wide interests, a sort of honorary member of each of the families whom he professionally attends, and that "in order to keep his professional poise and his own emotional balance the doctor must learn to take fortune's buffets and rewards with equal thanks. When he has done this he has largely learned the true philosophy of life." The book has its value, but its price is rather high.

[5] *The True Physician. The Modern "Doctor of the Old School."* By Wingate M. Johnson, M.D. New York: The Macmillan Co.; London: Macmillan and Co. Ltd. 1936. (Pp. 157. 7s. 6d. net.)

Notes on Books

A collection of the lives of twenty-four ***British Masters of Medicine***,[6] by separate hands, has been successfully edited by Sir D'ARCY POWER, who, having written lives of Harvey and many others in the *Dictionary of National Biography* and in *Plarr's Lives of the Fellows of the Royal College of Surgeons of England*, is the ideal choice for what must have been a labour of love. In addition to general physicians, such as Harvey, Sydenham, Jenner, Bright, Addison, Stokes, Osler, Mackenzie, and surgeons such as John Hunter, Lister, Pott, Fergusson, and Paget, the book contains accounts of specialists such as Manson, Willan, James Simpson, Hugh Owen Thomas, and Robert Jones, and, as representing anatomy and physiology, William Turner and Starling. It is well illustrated. Professor J. A. Gunn's interesting account of Sir John Floyer, the victim of asthma, is accompanied by the only known portrait of this hydrotherapist, recently discovered by Professor Gunn in the Bodleian Library. Another life with special attractions—those of the personal touch—is that of Sir James Paget by the editor. Their families were friends, and more than half a century ago Sir James, then at the height of his success, helped, in the study of historical manuscripts, the young graduate from Oxford, who thus saw some of the secrets of his senior's success—a perfect home life, a gracious wife who saved him trouble in every way, an unruffled temper, and so strict an economy of time that he was always punctual and never hurried.

From the pen of the professor of paediatrics at St. Louis, Dr. JOHN ZAHORSKY, a new book on nursing of sick children must be welcomed, and in its production he has been ably assisted by Miss BERYL HAMILTON, a graduate nurse. *Pediatric Nursing* (Kimpton, 16s.) is copiously illustrated, has a good index and glossary, is well printed, and contains as much as, if not more than, many textbooks on disease in childhood intended for medical men rather than for nurses. Indeed, this criticism of excess is the only main one to be levelled at the book, and it is given further point by the division of the book into two parts, whereby the "science" of paediatrics precedes the "practice," so that essential nursing procedures come after a more than modest exposition of diseases of children. Viewed from the nurse's angle the second half of the book must be judged the more important, and it is an excellent plan which includes details of organization in the various wards and out-patient departments. Child psychology, home environment (and details of nursing procedures as modified in the home), together with good accounts of the feeding of normal and sick infants and older children, are well described.

Thérapeutique Hydro-climatologique des Maladies du Foie et des Voies Biliaires, by Professors PAUL CARNOT and MAURICE VILLARET and Dr. RÉNÉ CACHERA (Masson et Cie, 20 francs), is a member of the Library of Waters and Climates produced by the School of Hydrology in Paris, the others dealing respectively with the evolution of thermo-climatism and the "cures" for gastro-enteric disorders, tuberculosis in its various forms, the non-tuberculous respiratory disorders, the diseases of the kidneys and bladder, and paediatrics. The treatment of liver disorders is above all a *cure du boisson*, and no fewer than thirty-five French waters appear to be recommended. This stretching of the net is unlike the usual clear-cut indications in France. The diminutive quantities sometimes now taken—a pendulum swing from the generous dosage of other days—may also be criticized, since surely in these disorders lavage *per vias naturales* by solvent, alterant, or isotonic waters is a large part of the "cure." Recent studies which have sought to explain the mechanism of the action of waters are duly noted, as well as the great value of local baths and cataplasms. Marine climates are contraindicated.

[6] *British Masters of Medicine*. Edited by Sir D'Arcy Power, K.B.E., F.R.C.S., F.S.A. London: The Medical Press and Circular. 1936. (Pp. xv + 242; 33 illustrations. 7s. 6d.)

Preparations and Appliances

FRACTURES OF THE NECK OF THE FEMUR

Simplified Technique for the Introduction of the Smith-Petersen Nail

Professor ERNEST W. HEY GROVES, M.S., F.R.C.S. (Bristol), writes:

The universal adoption of the Smith-Petersen pin as the best method of fixing a fracture of the neck of the femur is evidence that this method has given general satisfaction. The efficacy of the nail is due to the fact that the three radiating blades are made of such thin steel that it can be driven in with the minimum destruction of the bone, and also because it immobilizes the fragments against rotatory displacement. Once the nail is " well and truly " laid in correct position the fixation of the fragments is so firm that no splinting is required and the patient is allowed to move the leg at once. But it is just this correct placing of the nail that causes all the difficulty. Smith-Petersen himself in his original operation made a wide exposure. Watson Jones makes rather a smaller exposure, but still there is a big incision and an opening of the hip-joint. Sven Johannsen has introduced a " blind " method of nailing, and this has been very widely adopted and especially advocated by King of Melbourne. This method consists in placing several Kirschner's wires through the base of the trochanter into the neck and head, taking *x* rays, removing all but the correctly placed wire, and then inserting a modified nail with an axial canal over the wire as a guide. But the blind method is extremely difficult and tedious, and it is common for it to occupy one or two hours in its execution. In a frail patient of over 70 years of age one hesitates to use a method which involves a big open operation or which occupies over an hour. I have devised the following technique to meet this difficulty. The fracture is first accurately reduced by traction, and the correct reduction confirmed by *x* rays in both planes. It is very important to get a lateral view to ensure that the neck is on the same level as the head. Two points are now marked on the patient's skin: A over the middle of the transverse axis of the head of the femur, and B at a point where the axis of the neck and axis of the shaft intersect. This may be done accurately by the use of a notched two-limbed metal gauge stuck on to the patient's skin. The hinge of the gauge lies just below the anterior superior iliac spine, one limb lies in the skin fold of the groin, and the other vertically down the leg (Fig. 1).

The notches (at half-inch intervals) enable points A and B to be exactly marked on the skin. For example, in Fig. 1 the point A is just below and lateral to the sixth notch on the oblique limb of the gauge, whilst B lies just medial to a point midway between the seventh and eighth notches.

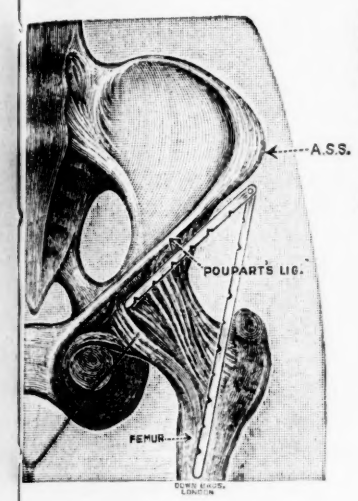


FIG. 1.

The length of nail required is measured by reference to the *x* ray with the gauge (Fig. 1). The length of the line through A and B out to the surface of the shaft and inwards to within a quarter of an inch of the surface of the head is marked with rule and compass, and this then placed on the gauge. In the figure shown it would correspond to seven notches—that is, to three and a half inches.

The patient's skin having been thus marked, the operation begins by making tenotomy openings through the skin for the insertion of the pointed prongs of the drill guide. This guide (Fig. 2) consists of a horizontal bar bearing three verticals. The one pointed vertical is fixed at one end of the horizontal bar, the other two verticals can be adjusted at any distance from the fixed vertical and held in position. The second vertical is a quarter of an inch longer than the first. It is made of this length so that when the first vertical is resting on the head of the femur it may rest on the neck, while the horizontal lies parallel with the axis of the neck. The third vertical carries a perforated steel tube at its distal end. This just takes a Watson Jones drill. When the drill is inserted it lies in the same line as the points A and B when viewed from the front, and at a depth of five-eighths of an inch from the top of the middle vertical and seven-eighths of an inch from the end vertical, so as to lie in the axis of the neck (Fig. 3). The verticals are adjusted so that the two pointed ones lie just over A and B on the skin and pressed down until the points are felt firmly against the bone, while the drill carrier vertical is adjusted to lie closely pressed up against the outer side of the skin of the thigh. The drill is now thrust through the skin and soft parts and bone for about four inches. The instrument is then removed, leaving the drill in place. An incision two inches long is made vertically down the outer side of the thigh with the drill at its centre and the edges retracted. The nail is driven in over the guide drill and the wound closed by a few sutures.

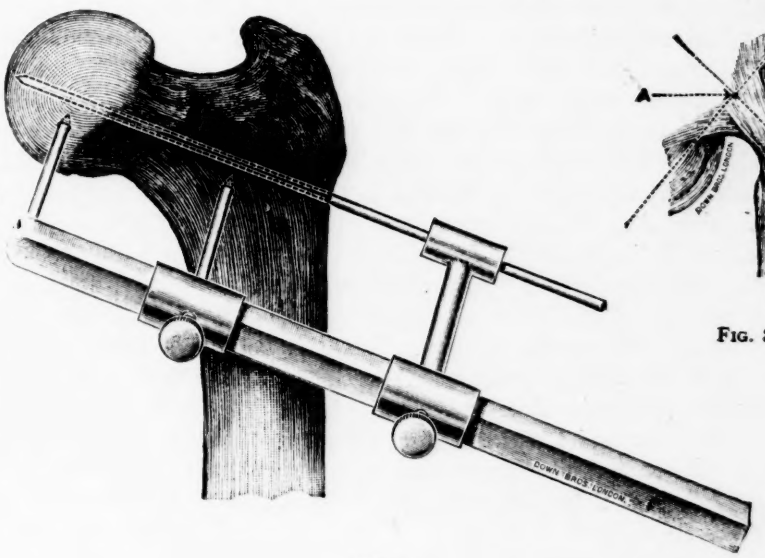


FIG. 2.

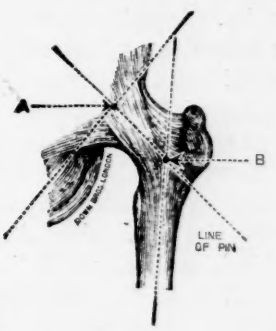


FIG. 3.

The operation is bloodless and occupies only about eight minutes. It may thus be fairly described as trivial in character. The skin incisions are done under local anaesthesia ; gas and oxygen is given while the nail is being driven into position. I had the honour of demonstrating this appliance at the meeting of the Association of Surgeons at Edinburgh in May and at the joint meeting of the Académie de Chirurgie and the Royal College of Surgeons of England in July.

So far I have only had the opportunity of using this technique in a few cases, three of my own and three by colleagues under my instruction. But in all it has fulfilled these three points: accuracy of insertion ; celerity (fifteen to eight minutes) ; and complete freedom from shock or haemorrhage. The appliances have been made for me by Messrs. Down Brothers.

British Medical Journal

SATURDAY, SEPTEMBER 19th, 1936

ANAEMIA IN PREGNANCY

During the last few years it has become recognized that dietetic-deficiency anaemias may be due to lack of one of three substances: iron, the intrinsic factor (apparently a gastric enzyme), and the extrinsic factor, the nature of which is not known. Deficiency of iron leads to a hypochromic anaemia, whereas the anaemia due to deficiency of either the extrinsic or the intrinsic factor is of the macrocytic type, the colour index exceeding unity. Iron is the only heavy metal present in any measurable quantity in the body, most of it being combined to form haemoglobin. The total amount present in an adult is about 3 grams, or the amount of iron in a large nail. The metal is mainly absorbed from the duodenum and excreted in the colon, and there is some evidence to show that the amount absorbed is to no little degree dependent on the amount of free hydrochloric acid present in the stomach. It has been computed that the average individual in this country absorbs between 5 and 10 milligrams of iron daily and excretes approximately the same amount. The fact that women bleed physiologically makes them more liable to secondary anaemia than men; and it is possible, as Widdowson and McCance[1] have recently suggested, that the accepted "normal" for women's haemoglobin may not be a true normal, but to some degree pathological.

It is natural that attention should have been devoted to the question as to what degree, if any, of anaemia is occasioned by pregnancy, and it must be admitted that not a few communications on this subject have been characterized by an insufficient appreciation of the scope of the problem. Two papers bearing on this matter were published in last week's *Journal*, and two more appear in the present issue. Dr. W. C. Smallwood[2] gives a logical and complete classification of the anaemias occurring during, or complicated by, pregnancy. Some will question whether the term "physiological anaemia" should be retained, but it does at least draw attention to the fact, occasionally forgotten, that some degree of hydraemia is normally associated with pregnancy. He concludes that a routine haemoglobin estimation should invariably be made on every patient when she reaches the seventh month of her pregnancy, and that all cases with severe degrees of anaemia should be referred for detailed haematological investigation. With this conclusion no one can quarrel. It is obvious, however, that it is not practicable for the obstetric staff at an ante-natal clinic to carry out haemoglobin estimations by any of the standard methods—by methods that would satisfy a pathologist. But, *pace* the pathologist, the blotting-paper method can be performed rapidly and with no very great degree of error, and its use might lead to the desired routine haemoglobin estimation at every ante-natal clinic. Dr. H. W. Fullerton[3] challenges the view that pregnancy causes a severe degree of anaemia, and offers strong evidence to show that in women living on diets deficient in iron there occurs a progressively decreasing percentage of haemoglobin as the result of the drain of menstruation and repeated pregnancies. As the result of a painstaking investigation entailing estimation of the haemoglobin levels of more than 3,000 individuals, he concludes that anaemia due to iron deficiency is common in women of the poor classes in Aberdeen; that menstruation involves an iron loss at least as great as that due to pregnancy and lactation; and that the diets of poor women are frequently inadequate to compensate for the iron demands of reproductive life. In the second part of his paper he estimates the total iron requirements of pregnancy and lactation as 550 mg., and maintains that this additional drain on the mother cannot of itself cause a severe degree of anaemia. With the general sense of his important conclusions it is impossible to disagree, but actual estimation of the intake and output of iron might conceivably prove pregnancy and parturition to be responsible for a greater degree of anaemia than he is prepared to admit. Miss Jocelyn Moore and Miss E. M. Pillman-Williams[4] undertook an investigation into the association of anaemia with the toxaemias of pregnancy. Although the number of cases investigated was too small to have any statistical significance, it is interesting to note their observation that the total gastric output of free hydrochloric acid in histamine test meals was very much higher in the summer than in the autumn and winter months. Strauss and Castle[5] have attempted to correlate gastric hypo-acidity with hypochromic anaemia, and if the findings of Miss Moore and Miss Pillman-Williams are confirmed it will suggest that gastric acidity, and consequently the absorption of iron, is dependent on dietetic factors.

The main point that emerges from the consideration of these papers is that a large number of women suffer because of a deficient intake of iron. Although such a deficiency can be made good by red meat, eggs, and vegetables, it is not always possible for poorer-class women to obtain these foodstuffs in sufficient quantity. Iron is cheap; an excess does not cause harm. During the child-bearing period of life the indication for administration of iron is therefore clear; and it would appear a logical step to prescribe iron for schoolgirls for one month every year. In these ways ill-health due to hypochromic anaemia might be stamped out in a generation at no great cost.

[1] *Journ. of Hyg.*, 1936, xxxvi, 13
[2] *British Medical Journal*, September 19th, 1936, p. 573.
[3] *British Medical Journal*, September 12th, 1936, p. 523; September 19th, 1936, p. 577.
[4] Ibid., September 12th, 1936, p. 528.
[5] *Amer. Journ. Med. Sci.*, 1933, clxxxv, 1539.

PHYSICAL TREATMENT IN GERMANY

What should this hard-worked adjective physical signify? The material body is physical as distinct from psychical. Physical education, exercise, training, mean bodily development ; but the same name is given to the energies of the outer world by which the body is sustained. Again, in a purely medical sense, physic is the art or practice of healing, and hence the word physician. And now, lastly, the adjective physical is given to the province of medicine which is concerned with natural energies as remedies. Physical medicine as so understood must needs have a place in many social efforts, such as schools, especially those for delicate children, convalescent centres and homes, camps and rest houses, general hospitals, clinics and physical institutes, gymnasia, sanatoria and hydrotherapeutic institutions, spas, and seaside and climatic resorts. To these must be added the " nature " cures and cults, in which physical methods are always, but not always wisely, employed.

The Rudolf Virchow Municipal Hospital in Berlin and the Barmbeck Hospital in Hamburg have long been known for the excellence of their departments for physical treatment and for the researches of their directors, Dr. Alfred Laqueur and the late Professor Erich Plate. In most hospitals such departments are very limited in their scope—equipped perhaps for massage, radiant heat, light, and electricity. In few has any provision been made for the investigation of chronic ailments under treatment by physical methods. A book by Dr. H. G. Scholtz,[1] who is now in charge of the institute of physical treatment at the Rudolf Virchow Hospital, may be welcomed as a full and systematic account of the work carried on at this and other hospitals in Germany where physical methods are adequately employed. It is prefaced by a short list of the procedures he employs, which of course are only those that can be included in a hospital department. The body of the work is occupied with sections on the " physical handling " of the different groups of disease. Some of these will well repay study by all who are occupied in the treatment of such diseases, whether in general practice or at the spas and special clinics. In the section dealing with circulatory disorders, for example, the indications for different forms of local treatment, both in feeble circulation and in high arterial tension, are fully described. In the section on muscular and articular rheumatism the continuous study of the reactions of the patient under physical treatment is held to be indispensable. " General modes " of stimulant treatment have here an important place ; being mild, such as subthermal baths, light and air baths, and the dry brush ; moderate, such as the hydro-electric, sulphur, peat, and radio-active baths ; and strong, such as high temperature, sand, vapour, and transcutan baths. The indications and necessary details for the use of these stimulant measures are fully set forth, with examples. Dr. Scholtz holds that in all cases a general as well as a local treatment should be given. The hardening of certain areas in the muscles, with the appropriate treatment, is considered, but many authorities outside Germany will not accept Schade's hypothesis of myogelosis. The section on nervous diseases should also be noticed, if only for the description and illustration of the manipulation pool in the Virchow Hospital, where, as in some of the orthopaedic centres in America, poliomyelitis is treated with success. Deeper pools are used for ambulatory re-education. No reference is made to the internal use of waters, although kidney, bladder, and digestive disorders are dealt with, as well as all varieties of " rheumatic " complaints. This is the more remarkable in view of the importance of general treatment and general reactions. Dr. Scholtz recommends natural carbo-gaseous and sulphur baths, but says nothing about sending rheumatic or paralysed patients to warm springs or brine baths.

It is said that more than half the people of Germany now follow some form of " nature medicine." Dr. Heinz Bottenberg, from his experience of panel practice and of " nature cure " establishments, should be qualified to give some account of this rather unfamiliar ground. His book, under the title *Biological Treatment*,[2] is further recommended by a statement on the cover that since the National Socialist State now regulates questions of health it behoves the medical profession to give more attention to methods of nature cure. The author recalls the many phases in medical thought which have ruled the healing art since the days of Hippocrates. But he holds that medical science, under the influence of Henle and Virchow and their followers, took a wrong direction in the nineteenth century, and became too departmental and over-specialized, concerned too much with cellular and organic pathology and elaborate diagnosis, and not enough with the individual man, although in every age wider conceptions of a true " biological medicine " have had many followers. Such methods of treatment are not opposed in principle to academic medicine ; they are scientific in thought and manner of research, although it may be premature to say much about " laws."

In support of this thesis Bottenberg enunciates certain therapeutic principles: to counteract the causes of disease the powers of resistance must be increased ; often the contrary influence must be applied, such as warmth for cold ; the four natural means of cure are regeneration, compensation, strengthening of function by exercise, and drawing away of disease by revulsion. Biological treatment finds its great field of application in the skin: air, sunshine, water, convey through the skin a wealth of functional stimuli ; cold frictions induce heat, cold packs withdraw it. Other cutaneous methods, like the carbo-gaseous bath at falling temperature, or the arm bath at rising temperature, may be used respectively to raise or lower the arterial tension. From such considerations it is a fair conclusion that inactivity of the skin is a potent cause of disease. Sections are devoted to: (1) the media and methods of biological

[1] *Die Physikalische Behandlung innerer Krankheiten.* Berlin and Vienna: Urban and Schwarzenberg. (RM. 5.50 ; geb., RM. 7.)

[2] *Biologische Therapie des praktischen Arztes.* Munich: J. E. Lehmanns Verlag. (Geh., RM. 7.50 ; RM. 9.)

treatment ; (2) the functional stimulants to be found in nature—the fresh air, solar radiation, movement and rest (including manipulation and gymnastics), waters, warmth and cold, nourishment, the sea ; (3) general sedative and alterant (modifying) influences ; and (4) their application in practice.

Undoubtedly in Germany, as in other countries, there has been in recent years a growing interest in physical medicine—in radiology, hydrology, climatology, electricity, manipulation and physical exercises and training—both among members of the medical profession and in the public at large. It awaits the master mind to unite the *disjecta membra*, to bring together in one science the medical uses of all forms of natural and artificial energy, and at the same time, for purposes of teaching and practice, to divide this great province into the appropriate therapeutic specialties.

THE STOMACH IN ANAEMIA

The introduction of the flexible gastroscope and the possibility of inspecting the interior of the stomach with little risk or discomfort to the patient have been followed by a considerable volume of literature, most of it in German or French, on the appearance of the gastric mucosa in health and disease. Dr. Robert Lehmann has had the advantage of working with such famous people as the haematologist Chevallier, the gastroscopist Moutier, and the radiologist Béclère, and his monograph on atrophic gastritis in the idiopathic anaemias[1] may be taken as summarizing an important section of French opinion on the behaviour of the stomach in anaemia. The book is founded on the gastroscopic examination of nineteen cases of anaemia or glossitis, but of these only four had pernicious anaemia and five idiopathic hypochromic anaemia. The bibliography is much more international than in many French writings, but the proof-reading is defective, one unfortunate author being described as Wotts on page 30 and Wits on page 31. There is a brief historical introduction showing that before the practice of gastroscopy it was impossible to establish the clinical diagnosis of atrophic gastritis. With the gastroscope it is considered possible to distinguish two types of atrophy, localized (*l'atrophie gastrique en aires*) and diffuse, both of which tend to spare the pyloric antrum and both of which are common in the idiopathic anaemias. In localized atrophy the atrophic zones are usually 1 or 2 cm. in diameter and bluish white or mother-of-pearl in colour ; the intervening mucosa may be healthy or show early atrophic gastritis. Diffuse atrophy begins with an unnatural smoothness and pallor of the mucosa of the body of the stomach, progresses to atrophy and disappearance of the rugae, and leads to a condition in which the mucosa is so thin and transparent that the vessels beneath it become clearly visible. *X*-ray examination may reveal the diminution in size and number of the gastric rugae in diffuse atrophy, but it is much less reliable than the gastroscope, and it is doubtful whether localized atrophy can be displayed. Localized atrophy is common in pernicious anaemia and diffuse atrophy in idiopathic hypochromic anaemia, but the changes are not pathognomonic. Like the Hunterian glossitis with which they are often associated, both may regress under the appropriate treatment with liver or iron. Although atrophic gastritis appears to be very common in pernicious anaemia and in those cases of idiopathic hypochromic anaemia in which the gastric secretion is impaired, it is unlikely that the appearances are at all specific, and we do not yet know to what extent they are correlated with the anaemia or modified by haematinic treatment. There is insufficient experience and material for judgement on these points, and Dr. Lehmann's book cannot be regarded as more than a preliminary communication.

[1] *Les Atrophies Gastriques dans les Anémies Idiopathiques et les Métanémies.* By Robert Lehmann. Paris: Librairie E. le François.

SOCIAL STUDIES ON PATIENTS TREATED BY THYROIDECTOMY

About three years has elapsed since total thyroidectomy for the relief of intractable heart failure was first practised in America, and the time has now come when an estimate of some value may be made of its lasting effects. This has been done from the point of view of the social worker on a series of forty-seven patients by E. Cohen and Rosalind L. Hermann.[1] Their results, gained from an interrogation of the patient and those who live and work with him, are entirely subjective, but make a valuable addition to the estimates based on the clinician's findings, and it is possible that the lay worker may in some respects gauge more truly the value of treatment than the medical man. Careful inquiry was made as to the exact degree and duration of disability before operation. The financial resources of the patients, emotional reactions, and personal and family problems were also studied. The forty-seven patients were classified in three groups according to their ability for effort, and those in the first group who were able to do remunerative work, housework, or lead a normal social life numbered twenty-three. These activities were possible for periods of from three to twenty-eight months. The second group of seventeen patients comprised those with moderately increased capacity for exertion ; the third group of seven patients reported no increase in activity nor subjective improvement. The groupings thus made, which indicate on the whole very satisfactory results, differed to some extent from those made independently by the physician concerned ; the latter's rating was for some patients higher and for others lower than that arrived at from the present inquiry. Some observations were made on personality changes following treatment. Previous studies from this point of view have shown that adverse changes, such as the mental torpor sometimes seen in spontaneous myxoedema, are uncommon. Of the present series, irritability was reported in about half of the patients, and in some cases was attributed to disappointment when it was found that return to full normal activity was not possible. Fundamentally, however, the personality was apparently unaltered by the operation, for those who could adjust themselves to circumstances before treatment were able to do so afterwards, and it is suggested that psychological factors may render some patients unsuitable for this form of therapy. There were five such in this series, for whom, because of unfavourable emotional reactions, the operations were afterwards thought to have been inadvisable. The operation of

[1] *New England Journ. Med.*, July 2nd, 1936, ccxiv, 1.

total thyroidectomy for cardiac disease had been done in a small series of patients in conjunction with oxygen therapy, and promising results are reported by A. L. Barach, D. W. Richards, and W. B. Parsons.[2] Previous work has shown that residence in a 50 per cent. oxygen chamber for some days may alleviate cardiac failure when the usual methods of treatment by themselves fail to give relief, and by applying this method as a preliminary to thyroidectomy, as well as after and during the operation, lessening of post-operative reactions is claimed. During the short period of absence from the chamber necessary for the performance of the operation, oxygen inhalation was continued by nasal catheter, local anaesthesia after a preliminary dose of nembutal being used. Full clinical details of the twelve cases with charts are published, and reports on the later post-operative results are given ; they supplement and in general confirm the publications of others on thyroidectomy for heart disease ; but these preliminary studies on the effect of continuous oxygen therapy have a new value in suggesting that its use may render the operation safer, and also make possible a wider selection of cases.

POISONING BY BENZENE DERIVATIVES

The power of a variety of benzene derivatives to produce agranulocytic angina has recently attracted considerable interest, which has resulted in the discovery that injuries to the haemopoietic system from benzene derivatives are commoner than had been suspected. Professor Danielopolu, in a recent article,[3] points out the distinction between acute poisoning by benzene and its allies (of industrial importance) and the chronic form of intoxication, the most serious effect of which is agranulocytosis. The three classes of drugs incriminated in the latter are amidopyrine, the arsenobenzenes, and dinitrophenol. The last-mentioned is the least important because its therapeutic use has doubtful justification. Danielopolu has shown that the barbiturates antagonize the immediate toxic effects of this drug, but unfortunately not the chronic toxic actions. He stresses the point that one of the chief dangers to the public is that compounds containing amidopyrine are sold under a wide variety of proprietary names, with the result that very often its presence is not recognized. In Rumania amidopyrine is sold under forty different names. Fortunately recent legislation has remedied this state of affairs so far as Great Britain is concerned. Since salicylates and their derivatives are relatively safe they are obviously to be preferred as antipyretics to such dangerous drugs as amidopyrine.

FAHRENHEIT

September 16th marks the bicentenary of the death of Gabriel Daniel Fahrenheit, the inventor of the thermometer scale that bears his name. He was born at Danzig on May 14th, 1686, and was at first intended for commerce, but he devoted himself instead to the study of physics and gained his living by the construction of meteorological instruments. Most of his life was spent in England and Holland. He was elected a Fellow of the Royal Society on May 7th, 1724, and in the same year contributed to the thirty-third volume of the *Philosophical Transactions* five short papers in Latin on the following subjects: (1) experiments on the degree of heat of certain boiling fluids, (2) experiments and observations on freezing of water, (3) specific gravity of certain substances, (4) a new aerometer, (5) description of a new barometer. During the last years of his life Fahrenheit occupied himself with the construction of a machine for drying up flooded areas, the completion of which he left to his friend S'Graveshand, who did not, however, succeed in making it practicable. The invention of the type of thermometer containing a liquid hermetically sealed in a glass bulb with a fine tube attached is generally ascribed to Galileo. Alcohol was the liquid first employed. In 1714 Fahrenheit proposed to take as zero the lowest temperature obtainable with a freezing mixture of ice and salt and to divide the interval between this temperature and that of the human body into 12 degrees. To obtain finer graduations the number of divisions was increased later to 96. Fahrenheit's scale, with its small degrees and its zero below the freezing point, has undoubted advantages for meteorological work, and is still retained in most English-speaking countries, though for general scientific purposes the centigrade system has long been almost universally employed.

EXPERIMENTAL STUDIES ON HEADACHE

The discovery that administration of ergotamine tartrate will relieve the distressing headache of migraine when other drugs are useless has revived controversy regarding the causation of the headache in this common disorder. Adherents to the theory of sympathetic dysfunction explain the action of this drug to their satisfaction by asserting that ergotamine paralyses the sympathetic system. But the experiments on which this action was demonstrated were carried out on anaesthetized animals, and the dosage was far in excess of that used in the treatment of migraine in man. The possible effect of ergotamine on the vascular system was not taken into account. It is therefore unwise to attribute the therapeutic value of this drug in migraine to paralysis of the sympathetic system until further evidence based on its action in man is forthcoming. Soloman[1] has already shown, by measuring the electrical resistance of the skin, that there is no difference in the activity of the sympathetic system between those patients in whom relief from headache is procured by ergotamine and those in whom the headache is allowed to run its course. He admits that it is possible there may be a local intracranial effect on the sympathetic system, but there is no reason to suppose such an isolated effect can occur in the sympathetic system, while there is also no evidence that ergotamine can exert a local effect. In favour of a sympathetic origin for migraine is the fact that the headache can be relieved by cervicothoracic sympathectomy. Love and Adson[2] found that in patients who were subjected to this operation for Raynaud's disease, but who also complained of severe periodic headache, the results of operation were very

[2] *Ann. Int. Med.*, May, 1936, p. 1513.
[3] *Bull. Mens. Off. Internat. d'Hyg.*, 1936, xxviii. 699.

[1] *Arch. Neurol. and Psychiat.*, 1936, xxxv, 964.
[2] Idem, 1936, xxxv, 1103.

good, the headache being either abolished or much relieved. Cases of uncomplicated migraine were also treated. As their results were best in those cases in which a known vasomotor disturbance, Raynaud's disease, was present, some vascular mechanism would also seem to play a part in the production of the migrainous headache. That the blood vessels do play some part in the experimental production of headache has been shown by Clark, Hough, and Wolff,[3] who, in inducing headache by injection of histamine according to Pickering's technique, discovered that there was a discrepancy between the behaviour of the blood vessels inside the skull as compared with the general circulation. Records of the systemic arterial blood pressure, the cerebro-spinal fluid pressure, the temporal arterial pulsations, and the intracranial pulsations were obtained simultaneously, and it was found that the cerebral vessels remained dilated with an increase in the cerebral blood flow during the rise in systemic blood pressure following its initial fall after injection of histamine. From their experimental data Clark, Hough, and Wolff conclude that the dilated and hypotonic cerebral vessels are less able to absorb the minor changes in intracranial pressure produced at each cardiac systole, and variations in pressure within these vessels are more easily transmitted to sensory nerve endings in their walls. Afferent impulses taking origin from the walls of these vessels are interpreted as the pain of a headache. These experiments certainly support the theory of a vascular basis for the headache of migraine in view of the peculiar "throbbing" character of the pain in this condition. But whether the stimulus which produces the essential vaso-dilatation of the cerebral vessels is the result of the presence or absence of an endogenous or exogenous agent is not yet known.

[3] *Arch. Neurol. and Psychiat.*, 1936, xxxv, 1054.

TERCENTENARY OF HARVARD

While Harvard University has been celebrating the tercentenary of its foundation this week, the borough of Southwark has been honouring the memory of John Harvard, a notable citizen, after whom the university is named. A special service was held on Friday at the Harvard Chapel of Southwark Cathedral—the chapel built by former students and friends of the university. It was in 1636 that the general court of the Colony of New England voted £400 towards "a schoole or colledge," which in the next year was ordered to be at "Newetowne" (later renamed Cambridge after the university in this country, to which many of the leading men of the colony had belonged). John Harvard, a young dissenting minister and native of Southwark, emigrated to New England in 1637. He died within a year of his arrival, bequeathing to the newly founded but unorganized college over £700 and his library. Out of such inauspicious beginnings grew Harvard University. Its history has remained unbroken since 1640, and to-day it possesses a medical school of considerable renown. Founded in 1783, the Harvard Medical School was first housed in Cambridge, in quarters loaned by the college. Here, five years later, the degree of bachelor of medicine was first given to two men; the M.D. degree was not given until 1811. In the latter year the school moved from Cambridge to Boston, where it is to-day, although it has had several different homes in that city. The period 1811 to 1869 was one of gradual expansion. It was not notable for the numerical strength of the school's students (other medical schools had appeared in New England to rob Harvard of its monopoly), but the faculty included many distinguished men, among them being J. C. Warren, James Jackson, Oliver Wendell Holmes, the Bigelows (father and son), and G. C. Shattuck. Perhaps the most important years in the school's history were those between 1869 and 1909, when Charles W. Eliot was president of the university. Up to the time of his accession the school was practically a private institution. The university conferred degrees, but had no control over the finances and very little over the administration. The aim of the school was to supplement the instruction in practical medicine that could be acquired by assisting an older physician. The course of lectures was the same each year. To be examined for a degree in medicine the candidate had to show that he had bought tickets for two such courses of lectures and had spent three years with a practising physician. The examinations were oral and the candidates were required to pass in only a majority of subjects to receive a degree. Eliot, however, altered all this—not without considerable opposition—and placed the school on a full university basis. During this period also—namely, in 1906—the school moved into the quarters it now occupies, a magnificent group of buildings, still affording adequate space after thirty years' occupation. Close to the school are the Peter Bent Brigham, the Children's and Infants', and the Lying-in Hospitals, these providing facilities for the clinical instruction of the students. Of recent scientific achievements may be mentioned the contributions of Dr. Harvey Cushing to the surgery of the nervous system, and of Drs. G. R. Minot and W. P. Murphy on the treatment of pernicious anaemia.

A COLONIAL MEDICAL SERVICE LIST

On January 1st, 1934, the Colonial Medical Service was constituted a separate branch of the Colonial Service. Special regulations governing the composition of the Service and the appointments and conditions of employment were drawn up, also a schedule of offices the holders of which automatically became members of the new Service. This information, with a second schedule of amendments which have been made since January 1st, 1934, and, more especially, an alphabetical list of members of the Service with details of their qualifications, appointments, etc., has now been published in the first *Colonial Medical Service List* (H.M. Stationery Office, price 1s.). This is a welcome publication, since it presents conveniently within the cover of a pamphlet much information which was hitherto scattered through several reference books.

The annual conference of Local Medical and Panel Committees will be held at British Medical Association House, Tavistock Square, London, on Thursday, October 22nd, and the Conference Dinner at the Piccadilly Hotel on the evening of the same day.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the renal diseases met with in general practice. The first group of articles on Treatment in General Practice, thirty-five in number, was republished in book form last March by H. K. Lewis & Co., and a second volume will appear in the autumn.

TREATMENT OF PYELITIS

BY

J. NORMAN CRUICKSHANK, M.C., M.D.,
D.Sc., F.R.C.P.

The term "pyelitis" is used in a general way to include not only suppurative inflammation of the renal pelvis but also the accompanying inflammation of the ureter and bladder. Pyelitis may be acute, subacute, or chronic, and may develop rapidly or insidiously. The infection may occur in a previously healthy urinary tract, or may arise as a complication of some other abnormality such as calculus or tumour. Acute pyelitis is common in pregnancy on account of the tendency to dilatation of the ureter and achalasia of the ureteric sphincters, which predispose to stagnation of the urinary flow and favour the growth of organisms.

Pyuria and bacilluria are the signs pathognomonic of infection of the urinary tract. The pus may be so abundant as to be visible to the naked eye, or so scanty that it can be detected only with the microscope. A highly purulent urine will give the "rope test" with liquor potassiae, but if this test is negative there is no justification for the conclusion that the urine is free from pus. The microscope is the only reliable means of ascertaining that pus and organisms have disappeared from the urine; the amount of pus may vary from day to day, and an apparent clearing of the urine may mean nothing more than a temporary retention of pus in the upper part of the tract.

In acute pyelitis there is always some degree of general disturbance from toxic absorption. In severe cases there is high fever with rigors, and lumbar pain is often distressing. In all cases, whether mild or severe, the patient should be kept at rest in bed until the acute phase has passed. When the temperature has settled and the toxaemia has lessened he should get up for short periods each day, as this helps to promote drainage of the ureter, but he must be careful to avoid chill or over-exertion.

Diet and Bowel Regulation

Diet during the early stages should be restricted to fruit, light farinaceous foods, bread-and-butter, and toast or plain biscuits. How much solid food of this kind may be allowed depends on the severity of the toxaemia. If there is much fever glucose and fruit drinks only are to be given. Milk is not desirable in large quantities, but it may be used in the preparation of puddings, or in tea, up to about one pint in the day. When the fluid intake is not restricted buttermilk may be given, and patients often appreciate a little plain ice-cream. When the febrile stage is passing off egg and fish dishes and vegetable purée may be added to the diet, but excepting an increase in the size of the meals no further liberty should be allowed until convalescence is definitely established.

Regulation of the bowels may be difficult. As a preliminary there is nothing better than castor oil (4 to 8 drachms) if it can be given without undue disturbance to the patient. A soap-and-water enema (1 oz. of green soft soap in a pint of warm water) is sometimes necessary to clear the colon. It may have to be repeated for several days, and in obstinate cases an olive oil enema may be required (10 oz. of warmed olive oil run in, under gravity, through a rubber catheter). After the bowel is cleared regular evacuations should be secured by giving the following mixture, three times a day, after food:

℞ Ext. casc. sagrad. liq. ... ... ♏ x
Tinct. bellad. ... ... ♏ v
Tinct. hyoscy. ... ... ♏ v
Syr. zingib. ... ... ʒ j
Aq. ... ... ad ʒ iv
Ft. mist. sig. ʒ iv, t.i.d., p.c.

An additional dose of 1 to 2 drachms of liquid extract of cascara sagrada may be required each evening for the first few days.

Pyrexia, Pain, and Fluid Intake

Pyrexia is best controlled by sponging with tepid water. Pain can usually be relieved by a simple analgesic, such as:

℞ Aspirin ... ... gr. v
Phenacetin ... ... gr. iij
Codein. phosph. ... ... gr. 1/12
Ft. pil. vel. pulv.

Occasionally, it may be necessary to give hypodermically morphine sulphate, 1/6 grain, and atropine sulphate, 1/100 grain. Irritability of the bladder and dysuria may be lessened by giving 10 minims of tincture of hyoscyamus, in half an ounce of water, thrice daily.

It depends on the treatment selected whether fluids are restricted or given freely. With the alkaline diuretic method large quantities of water must be given, but with all other methods of treatment the fluid intake is cut down to approximately two pints a day.

Alkaline Diuretic Treatment

Until recently the best treatment for acute pyelitis was alkalinization of the urine and the production of free diuresis by giving large quantities of water. Properly carried out this simple and inexpensive treatment is of the highest value in the early stages, but after the acute phase of the illness mandelic acid is preferable in most cases. The alkaline diuretic treatment gives satisfactory results only if careful attention is paid to the following details. The patient must be kept at rest and treated on the general lines indicated above. Fluid must be given in large volume so that there is a minimum daily intake of five pints. The output of urine must not be allowed to fall below ninety to a hundred ounces, and if it fails to reach this level the fluid intake must be further increased.

Enough sodium citrate is given to render the urine alkaline to litmus. There is no fixed dosage, but during the first day or two it is usually necessary to give from 30 to 60 grains of sodium citrate every two hours, up to a total of 300 to 400 grains in twenty-four hours. When there is difficulty in getting the patient to take so much citrate smaller doses may be supplemented with equal quantities of sodium bicarbonate. The insipid taste of sodium citrate may be concealed by making a mixture

containing 60 grains of sodium citrate and 6 minims of cencentrated compound infusion of gentian to each ounce of water. This can be used in doses of 4 to 8 drachms (equivalent to 30 to 60 grains of citrate). The only reliable guide to dosage is the reaction of the urine. Test each specimen as it is passed ; when it becomes alkaline to litmus the citrate may be reduced to 30 grains, four times a day. There is very little risk of alkalosis if the dosage is reduced in this way as soon as the urine becomes alkaline. To prevent hypochloraemia from the free diuresis 1 to 2 drachms of sodium chloride should be included in each daily diet.

Failure to obtain marked improvement is rare if the treatment is carried out exactly as described. Pyuria may be expected to clear up or to be reduced to a trace, but resistant cases occur in which a sterile urine cannot be obtained even after many weeks of treatment. In such cases alternation between the alkaline diuretic and one of the other methods involving acidification of the urine is usually effective.

Mandelic Acid Treatment

About 1931 the treatment of pyelitis with ketogenic diets was introduced, but the general experience has been that this method is unreliable and difficult to control. The principle employed is the production of ketosis by restricting carbohydrate and increasing fat in the diet. The production of a ketonuria should be confirmed by testing the urine for acetone bodies with sodium nitroprusside and ammonia—Rothera's method. Observations made in connexion with these ketogenic diets showed that β-hydroxybutyric acid has a powerful action in preventing the growth of organisms provided the urine has an acid reaction (pH 5.3). Hydroxybutyric acid cannot be given orally, because it is broken up in the upper part of the alimentary tract, but mandelic acid has been found to be an effective substitute for it. Sodium or ammonium mandelate is now used instead of the more irritating mandelic acid.

In giving mandelic acid or one of its salts the urine must be strongly acid and the pH must not rise above 5.3. With a moderate restriction of fluid this degree of acidity may develop, but if it does not, ammonium chloride must be used to correct it. To begin with, 15 grains of ammonium chloride is given four times a day ; if the urine does not become sufficiently acid the dose may be increased to six or eight multiples of 15 grains, but it is not desirable to continue this high dosage for more than two or three days. The urine should be examined for casts and blood cells, the appearance of which indicates renal irritation. Nausea and vomiting may make it necessary to stop using ammonium chloride. In such cases the attempt to treat the patient with mandelic acid must be abandoned unless the pH of the urine comes within the necessary range.

The normal dose of mandelic acid is 45 grains (3 grams) four times a day, and the equivalent of this in the form of sodium mandelate is 50 grains (actually 3.43 grams). Sodium mandelate is sometimes dispensed in tablets, each containing 3.43 grams, but is more conveniently given in solution. I have found the following mixtures effective:

No. 1.—Ammonium Chloride Mixture

Ammon. chlor.	ʒ j
Ext. glycyrrhiza liq.	ʒ iv
Aq.	ad ʒ viij

One tablespoonful in water, four times a day, before food.

No. 2.—Sodium Mandelate Mixture

Sodium mandelate	ʒ jss
Syr. aurant.	ʒ jss
Aq.	ad ʒ viij

One tablespoonful in water, four times a day, after food.

The reaction of the urine is tested regularly during treatment by adding five drops of a buffered methyl-r solution to 5 c.cm. of urine in a test tube. The colo is bright pink at pH 5.3, but is orange or yellow if t reaction is too alkaline. The indicator solution can purchased from any reliable chemical supply house.

The use of ammonium mandelate obviates the separa administration of ammonium chloride. It is now suppli in palatable mixtures by several makers—for examp "mandelix" by British Drug Houses Limited, a "ammoket" by Boots Pure Drug Company Limite The dose of the former is 2 drachms, four times a day, water, and of the latter 4 drachms. If the urine is n sufficiently acid 10 grains of ammonium chloride m be given three or four times a day until the reaction corrected. If the mandelic acid treatment is carried carefully as described the urine should become ste within seven to ten days, unless there is some anatomi abnormality. There are exceptionally resistant cases, bu on the whole, the results are excellent.

Like all other methods of treatment that involve restr tion of fluid and acidification of the urine the mande acid treatment is unsuitable if there is active re disease. Careful watch must be kept for signs of re irritation, and if they appear the drug must be stopp Mandelic acid is sometimes tried in acute pyelitis from t start, but in my opinion it should be used only in m cases. When the patient is febrile and toxic the alkal diuretic method is preferable, and until the acute ph is passing off mandelic acid should not be introduced.

Hexamine

Hexamine (hexamina, *British Pharmacopoeia*, 19 hexamethylene-tetramine) is marketed under vari names, of which the best known is urotropine. The d is 5 to 15 grains for a single dose, but it may be necess to give 40 to 60 grains in the day. Hexamine is bro down in acid media, liberating formaldehyde, upon wh its bactericidal action depends. To ensure acidity of urine sodium acid phosphate is given (20 to 30 grai thrice daily ; sodium benzoate (5 to 30 grains) or a monium chloride (5 to 20 grains) is sometimes prefer for this purpose. The dosage should be adjusted so th the urine is acid to litmus. On account of the tende of hexamine to irritate the kidney it is usual to presc plenty of fluid (3 to 5 pints daily). The resulting diur has the disadvantage that the formaldehyde in the ur will be present in relatively low concentration. Doses the order of 10 grains produce so little formaldehyde t the concentration cannot reach the zone at which bact cidal action occurs. Higher doses are irritating, and hexamine is limited in its usefulness. It would appe nevertheless, that the continued presence of quite l concentrations of formaldehyde in the urine has so effect in inhibiting the growth of organisms in cases chronic infection. If hexamine is used the total dos should be divided evenly throughout the twenty-fo hours.

There are several proprietary preparations contain hexamine. In obstinate cases it is worth while try them, but the temptation to change from one remedy another should be resisted. It is important to make that the patient is having the maximum dose that he tolerate, and that the reaction of the urine is be properly controlled.

Pyridine and Hexyl-resorcinol

Several dyes of the pyridine series have been wid advertised as urinary antiseptics. They can be g orally in sufficient amount to produce a high concentra of the dye in the urine, particularly if the fluid intak

stricted. Favourable results are reported from many sources, but in my experience this form of treatment is uncertain in its action. The relatively high cost of these preparations and the risk of damage to the patient's underwear are additional disadvantages. Two of the best known are phenyl-azo-alpha-alpha-diamino-pyridine hydrochloride (trade mark "pyridium") and butyloxy-diamino-azopyridine (trade mark "neotropin"). Both are dispensed in coated dragées containing 1½ grains (0.1 gram) of the dye, and the dose is 2 to 3 dragées three times a day.

Hexyl-resorcinol (1:3 dihydroxy-4-hexylbenzol) is obtainable under the trade mark "caprokol." It is a powerful germicide, acting in either acid or alkali. When given orally it is secreted by the kidney, and in therapeutic doses exerts an antiseptic action without intoxication or irritation. It appears to be more potent in coccal than coliform bacillary infections. It acts by lowering surface tension, and for its optimum effect the fluid intake must be low. Sodium bicarbonate should not be given along with it. Hexyl-resorcinol is dispensed either in gelatin capsules, containing 0.15 gram of the drug in olive oil, or as a 2½ per cent. solution in olive oil. The dose is 2 to 4 capsules, thrice daily immediately after food, or 3 to 6 drachms of the solution. The latter is convenient for the smaller doses required for children; each drachm contains 0.1 gram of the drug. Opinions vary as to the clinical value of hexyl-resorcinol. In my experience it is inferior to alkaline diuresis or mandelic acid, but is useful as an alternative treatment in subacute cases, particularly where the bladder is irritable. Its cost is a disadvantage.

Vaccines, Bacteriophage, and Wash-outs

In very chronic cases of pyelitis vaccines are sometimes used, but it is doubtful if they can be relied on to clear up the infection. Vaccines have no place in the treatment of acute or subacute attacks. Attempts have been made to treat pyelitis with bacteriophage, but there has yet insufficient evidence to allow of a fair judgement of its efficacy.

Cystitis may persist in a troublesome form after the infection of the upper part of the urinary tract has become quiescent. In such cases local treatment by lavage and the instillation of antiseptics into the bladder may be beneficial. Bladder lavage may be carried out daily for several days, then every other day for 10 to 14 days, and after that once or twice a week. The fluid used must be non-irritant, such as silver nitrate 1 in 2,000 or acriflavine 1 in 5,000. In elderly patients with bacterial cystitis it is often helpful to wash out with boric lotion, empty the bladder, and instil 10 c.cm. of 10 per cent. argyrol, which is retained.

Drainage and Lavage of the Renal Pelvis

In some cases, particularly in the more severe forms of pyelitis of pregnancy, there is difficulty in establishing satisfactory drainage of the renal pelvis. Achalasia of the ureter may be treated by giving atropine (5 to 7 minims of tincture of belladonna, in water, three times a day), but it is not easy to deal with the tendency to stagnation of urine and accumulation of pus in the dilated ureter and renal pelvis. If this is not overcome by diuresis, it may be necessary to catheterize the ureter and wash out the renal pelvis with silver nitrate (1 in 5,000) or acriflavine (1 in 5,000). This requires special technique and experience, and should not be attempted in the ordinary conditions of practice. In severe cases with current blocking of the ureter and hyperpyrexia I have had striking improvement after such lavage, followed by continuous drainage with ureteric catheters kept in position for twenty-four hours at a time.

Conclusion

For the initial stages of acute pyelitis the most satisfactory treatment is a combination of rest, warmth, copious fluid intake, and alkalinization of the urine.

After the toxic febrile stage has passed off mandelic acid with restricted fluid intake and acidification of the urine may be substituted. Mandelic acid may be used from the beginning in mild acute cases, and in the subacute exacerbations of chronic infection of the urinary tract. It should not be used if there is active renal disease, and must be stopped if it causes renal irritation.

Opinions vary as to the value of other methods of treatment. In my experience pyridine and other dyestuffs, hexyl-resorcinol, and hexamine are inferior to the two methods referred to above, but many practitioners appear to be satisfied that these drugs are effective.

Disappointing responses to treatment can often be traced to insufficient dosage, careless technique, or lack of co-operation of the part of the patient.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

(*Continued from page 554*)

The Heart in Exercise

In his presidential address to the Section of Physiology, on September 11th, Professor R. J. S. McDowall discussed the various mechanisms which worked together to provide an adequate blood supply to any part of the body, whatever its activity, and whatever the posture of the body. He confined his survey to the effects of physical exercise, since most of the mechanisms were thus brought into action. Increased blood supply to any tissue resulted from the same blood being pumped more rapidly round the body, by increased activity of the heart, or from redistribution of the blood following variations in the calibre of the blood vessels. The force of the contraction of the heart was increased by stretching the cardiac musculature. Change in the rate of contraction depended on the balance between the sympathetic and the vagal groups of reflexes. When exercise was taken the sympathetic accelerator impulses increased and the vagal impulses were reduced. The range of acceleration was determined by the degree of activity of the cardio-inhibitory reflexes. In athletes during mild exercise the cardiac output was increased with a trivial acceleration of the rate, the increase being effected by a greater output during each beat. Certain procedures, such as sensory stimulation or asphyxia, increased the heart rate partly by reducing vagus activity, but subsequently this reduction was followed by an increase in the activity of the vagus.

Variations in Vessel Calibre

The local dilatation of vessels to accommodate the greater volume of blood was accomplished by chemical and nervous means; the substances concerned in the first case were the products of carbohydrate metabolism—namely, carbon dioxide and lactic acid—vessels being sensitive to the most minute changes in the hydrogen-ion concentration of the blood, and histamine. The nervous vaso-dilatation was probably of sympathetic origin, sympathetic nerves having been proved to contain vaso-dilator fibres. Once exercise had begun it seemed likely that local vaso-dilator reflexes were set up by afferent impulses arising within the muscles, possibly as a result of mechanical and chemical changes there. Hitherto closed capillaries in active muscles were also opened up, the blood to fill them being drawn from all other parts of the body, except possibly the voluntary muscles, the heart muscle, and the brain. Just as in the heart the reduction of the vagus restraint increased the range of cardiac activity and created a cardiac reserve, so there probably existed an exactly parallel mechanism which increased the range of vascular activity and similarly enhanced the reserve.

The afferent impulses concerned in determining the degree of vaso-constriction of the blood vessels arose from the cardio-aortic region and the carotid sinuses, and passed up the medulla by the aortic and carotid depressor nerves. It had been generally assumed that the primary function of this nervous control was to maintain the arterial pressure at a constant level. More recently it had become evident that these reflexes might have another and a more important function. The facts indicating this were: (1) that in physical exercise or mental stress the blood pressure, like the heart rate, rose in spite of the reflexes; (2) that the response of blood pressure to posture might be normal if the reflexes were destroyed, showing that the maintenance of a constant mean arterial pressure was not wholly dependent on the reflexes; (3) that, as in the case of the vagus, different animals, or the same animal in different circumstances, showed great variability in the activity of the reflexes; and (4) that conditions which depressed the activity of the vagus also reduced the activity of the depressor reflexes.

Action of Adrenaline

What might be imagined as happening in exercise or emotion was that, just as the vagus restraint of the heart became reduced, so also the depressor restraint of the vessels became reduced; more blood was thrown into the circulation and was dealt with by the heart, which at the same time increased both its rate and its output per beat. Evidence would probably be forthcoming soon that the extent of the activity of the vaso-dilator reflexes varied in different animals just as did the activity of the vagus. All these mechanisms were probably still further enhanced by the vaso-constrictor action of the sympathetic and the action of adrenaline, which was apparently secreted whenever the emotional stress of the occasion was sufficient. The physiological dose of adrenaline was probably minute, and might even be insufficient to raise the arterial blood pressure. It was certain that the dilatation of muscle vessels was not the result of the rise in blood pressure, for it could be shown that dilatation occurred with doses which did not raise the arterial blood pressure. Why adrenaline should constrict some blood vessels and dilate others was a major problem in the study of the circulation.

The injection of adrenaline rendered it impossible to affect the heart by a degree of vagal stimulation which had previously been effective, and the effects of cutting off the impulses from the carotid sinus were markedly reduced or completely abolished. This was exactly what would have been expected if adrenaline were secreted in the same circumstances in which the action of the depressor reflexes and the vagus was reduced, as in exercise. Further corroboration of this somewhat new view of the function of the vaso-dilator reflexes came from a study of the effects of emotion and exercise on man. The rise of arterial pressure in exercise had been shown to be the result of psychical changes; if exercise could be taken without psychical zest being involved the blood pressure might be expected to fall, as had been shown to occur in the horse. In a man taking slight exercise, although the systolic pressure rose, the diastolic pressure fell, indicating that more blood was being pumped out of the heart with each beat, but that blood was escaping from the arteries more rapidly than normal before the next systole. Since it had been experimentally shown that generalized vaso-constriction was an accompaniment of psychical effort, it must be assumed that the increased output of the heart was in part, if not wholly, the result of the vaso-constriction which called into use the reserves of blood, and that thus the circulation was maintained in spite of the greatly increased capacity of the active muscles.

Alcohol and Road Accidents

On the afternoon of Friday, September 11th, Dr. H. M. VERNON read a paper in the Section of Physiology on the relation of alcohol to road accidents. He said that, while it was generally admitted that the liability of motor vehicle drivers to road accidents was increased by the consumption of excessive quantities of alcohol, some drivers still maintained that moderate quantities had no effect, and even improved their driving, and this in spite of the large mass of evidence to the contrary forthcoming from laboratory studies. Direct tests on the road were very difficult to carry out, and as an alternative the motor-driving apparatus designed by Miles and Vincent and installed at the National Institute of Industrial Psychology, had been employed. The subject drove a dummy car along a track projected as a moving picture on the screen in front of him, the path taken by the car being automatically recorded.

The subjects underwent the tests one hour, half an hour, and immediately before taking an experimental dose of alcohol, and the tests were repeated half an hour, one hour, and two and a quarter hours after it. The alcohol was taken on an empty stomach three hours after the previous meal; the dose consisted, as a rule, of whisky containing 30 c.cm. of alcohol—rather more than a "large whisky"—or of mild beer containing only 5 c.cm. of alcohol. On the fifteen experienced drivers examined the mild beer had no effect, but the whisky caused a reduction of 6 per cent. in the driving time and an increase of 12 per cent. in the driving errors. In the five non-drivers tested, however, the mild beer had more effect in reducing time and increasing errors than the whisky. The various subjects differed greatly in their reactions, but half of them had their driving time reduced by 10 to 24 per cent. As a rule, the drivers were quite unconscious of any speeding up after drinking alcohol; this suggested that even moderate amounts of alcohol should be avoided before driving, and that it should be compulsory for all cars to be fitted with speedometers.

Roads, Vehicles, and Motorists

On Monday afternoon, September 14th, Mr. E. FRYER, in the Section of Engineering, discussed the application of science to the solution of the dangers and difficulties of road users. He forecast the characteristics of a road system which would accommodate future traffic requirements. There would be national "through routes" with at least two carriage ways, cycle tracks, footpaths and horse rides of a net width for the whole of these facilities of 260 feet. Adequate super-elevation would be provided at acute bends, and there would be uniform non-skid surfaces as well as no interruption at cross roads. Among his suggestions for improving the design of private motor vehicles were the elimination of draught and the control of ventilation inside the car, and the maintenance of a low centre of gravity without detriment to visibility and headroom or any restriction on the carrying capacity. Mr. Fryer emphasized the need for engendering among road-users a spirit of consideration, good manners, and good will. He also stressed the fact that the mere making of laws and regulations was unlikely to achieve any considerable reduction in the number of accidents unless legislation was so simple and clear that its common sense commanded the backing of public opinion.

On the following morning headlight glare and illumination in fog were considered by Dr. W. S. STILES, who examined critically the main methods suggested for eliminating or reducing dazzle. He drew attention to the possibilities in this connexion of polarized light; he also reviewed various suggestions for improving visibility in headlight beams during fog. Tests on the use of coloured light had failed to disclose any advantage. Such progress as could be made would probably result from the study of various light distributions in the beam.

In the afternoon of September 15th, in the same Section, Mr. R. G. BATSON called attention to the effect of the road surface and its maintenance on road safety, with particular respect to rugosity, slipperiness, cleanness, conspicuity, continuity, and surface irregularities. He stressed the need for information about the coefficient of friction on wet road surfaces over a range of speeds including values at much higher speeds than those hitherto employed, and he showed that the "slipperiness" of a road could not be judged by a single test at a speed of about thirty miles an hour. Stopping

distances of vehicles depended upon the characteristics of the coefficient–speed curve for the road surface. Road surfaces were only slippery when wet, and thus the lubricating action of the liquid on the road was a matter of primary importance. Mr. Batson stated that research on this aspect of the road problem had been started, and he indicated some of the preliminary results which had been obtained. The importance of a light-coloured surface was stressed ; continuity on the road was necessary, too, including continuity in conspicuity and rugosity as well as in super-elevation, traffic signs, and similar conditions. Equal rugosity across the road was essential, as well as continuity in rugosity along the road. The speaker concluded with an examination of the bearing of surface irregularities on the safety problem.

Climatotherapy

Introducing a discussion in the Section of Physiology on Monday, September 14th, Dr. O. KESTNER stated that strong and healthy adults were influenced by climate only to a very slight extent, and that therefore the effects produced by different climates must be studied on children, patients with various diseases, and weak and sensitive persons. From this standpoint, and not from that of meteorologists, the climates of Europe could be classed as sheltering or stimulating. The first were found in forests, the lower hills, and seaside resorts, protected by cliffs and heated by the Gulf Stream drift. Stimulating climates were found at high altitudes and in seaside resorts which were exposed to wind and to direct sunshine. Sheltering climates were good for weak and sick persons, but did not promote growth and development. Stimulating climates favoured growth and development ; increased the haemoglobin content of the blood ; enhanced combustion in the body ; retained food nitrogen for building new tissues ; and allowed better heat regulation, with increased gastric secretion and improved appetite. The stimuli of the sun's rays or of wind and cold air affected the skin ; hence the most sheltered climate could be obtained by the use of heat in the home, or by clothing out of doors, and each person could thus fashion his own climate.

Dr. M. B. RAY discussed certain climatic factors—temperature, radiation, atmospheric pressure, humidity, and ionization—which exerted an influence on the bodily health. The environmental changes thus induced were registered by the skin, which had a correlation with an intricate mechanism involving the blood, nervous system, and hormones of the body. The stability of the internal economy of the organism in the face of atmospheric variations was maintained by an autonomic adaptation affecting the chemistry of the blood and tissues, the acid-alkali balance, the gaseous exchange, and the state of the endocrine glands. Atmospheric disturbances involved periods of stimulation which passed unnoticed by most normal persons. According to Peterson's observations on the comparison of the records of barograph readings with those of the systolic and diastolic blood pressure in normal subjects, systolic peaks coincided with a rise in barometric pressure or the beginning of a fall, the diastolic pressure being low after this peak. In a normal person this rhythm did no harm ; if the climatic changes were sufficiently frequent and intense, good would result from the increase of the adaptive powers. On the other hand, in the old and feeble, where the powers of adaptation were inadequate, repeated atmospheric variations had an adverse effect.

A. P. Ohlmacher (*Journ. Amer. Med. Assoc.*, June 13th, 1936, p. 2053) records the case of a girl aged 18 who developed severe pain in the right quadrant of the abdomen. As appendicitis was suspected, laparotomy was performed. Apart from slight injection the appendix was normal, but the right ovary was considerably enlarged and presented a bluish tint interspersed with a few minute petechiae. On the third day after operation the temperature rose to 102° F. and bilateral parotitis appeared, which was indistinguishable from mumps. The subsequent course was uneventful.

TUBERCULOSIS IN WALES

WELSH NATIONAL MEMORIAL ASSOCIATION

Lord Davies, president of the King Edward VII Welsh National Memorial Association (for the prevention, treatment, and abolition of tuberculosis), in addressing at Tenby recently the annual meeting of that body, expressed disappointment at the obstinacy of the tuberculosis figures in the Principality. In 1935 the number of deaths from tuberculosis in Wales and Monmouthshire was 2,347, or 925 per million of the population, a slight increase as compared with the previous year, though a large decrease on earlier years. For both pulmonary and non-pulmonary forms of the disease the death rate in Wales is in excess of that prevailing in England. Out of the total number of patients who died from tuberculosis last year, 20 per cent. died within three months of the first examination by the tuberculosis physician. A good deal was said at the previous annual meeting about unnotified cases, and it was then stated that in one county about half the cases in which death had occurred had never been referred to the association's medical officers at all. A local inquiry showed that the real position was not so bad as these figures appeared to indicate, but it was still necessary to emphasize very strongly that immediate notification to the association's tuberculosis officers was an essential factor in the success of the campaign. It was taken as a gratifying indication of the closer liaison between the officers of the association and general practitioners that for every 100 deaths in Wales there were twice as many consultations and three times as many radiographs, and that the home visits by the medical staff, calculated on the basis of 100 deaths, were almost twice as many as those made in England. Some rather remarkable facts emerged from a closer analysis of the figures—for example, among females in the age group 15 to 25 no fewer than 48 per cent. of all deaths in Wales were attributable to tuberculosis.

The Association's Extension Plans

A brief report was also made on the extensions and developments at the association's institutions. The association owns seventeen hospitals and sanatoria, with a total of 1,516 beds, and rents 149 beds in outside institutions. A new hospital at Sully in Glamorgan, with 300 beds, began to receive patients in June last. The site consists of ninety-four acres of land and sixty-nine of foreshore overlooking the Bristol Channel. It is intended to include in the next financial programme the provision of a hospital at Swansea. An admirable site has been chosen, and it is hoped that there will be no delay in proceeding with the work. The question of after-care has been exercising the minds of the council, which has endorsed a proposition that in accordance with the principles actuating the Local Government Act, 1929, after-care work in connexion with tuberculosis should be dissociated from public assistance and regarded as a public health problem to be dealt with by the association on national lines as part of the scheme for the eradication of tuberculosis in the Principality. Lord Davies concluded his address from the chair with a warm acknowledgement of the loyal services of the staff, headed by Dr. D. A. Powell, the chief medical officer, who had, he said, succeeded in difficult circumstances in securing improvements and developments which would be of great help in the future.

The annual report, which was adopted on the motion of Lord Davies, seconded by Alderman D. D. Davies, chairman of Glamorgan County Council, is a comprehensive document embodying a long statistical review by the chief medical officer, followed by reports by the directors of research and of education, and by the area officers and medical superintendents. There are also a few papers by members of the staff on particular cases and techniques. The report, which is the twenty-fourth, can be obtained from the association's offices, Westgate Street, Cardiff.

Friendly Societies and Tuberculosis in Wales

The question of tuberculosis in Wales was also brought before the National Conference of Friendly Societies at its meeting at Cambridge on September 10th by Mr. J. E. Tomley, a member of the board of governors of the National Association. Mr. Tomley drew attention to the disparity in incidence in Wales itself as between the counties on the eastern or English border and the western or seaboard counties. The difference in mortality as between adjoining counties may be as much as 50 per cent. Whether the secret of the high incidence in Wales was some mysterious national physical weakness that made the Welsh people more susceptible to tuberculosis was being warmly debated in Wales, but Mr. Tomley was inclined to the view that it was largely because Welsh-speaking people were often content to remain domiciled in primitive and unhealthy surroundings, that their dietary was frequently unsuitable, and that they had a national characteristic of fatalism and would not seek or accept specialist attention and treatment. An undertaking had been given that the Welsh National Memorial Association would confer with the Welsh Insurance Committees with a view to arriving at some combined action. Sanitary officers were also to be consulted to ascertain how far the requirements of the tuberculosis regulations as to disinfection and the like were being carried out. That such action in Wales was necessary had been proved by the report of Dr. Rocyn Jones, medical officer of health for Monmouthshire, in which he complained that in forty-six out of 270 fatal cases of tuberculosis in that county the public health authorities knew nothing about the existence of the disease until after the patient had died. Mr. Tomley added that it was twelve years since the Ministry of Health issued its memorandum on the co-ordination of the work of tuberculosis physicians and insurance practitioners.

It was reported to the Friendly Societies' Conference that an interview had taken place with the Minister of Health and later with the Chief Medical Officer of the Ministry, and that the Minister had caused careful inquiries to be made into the tuberculosis mortality figures. It is understood that the subject will be commented upon in the annual report of the Chief Medical Officer shortly to be published.

PROBLEMS OF RHEUMATISM

INTERNATIONAL CONGRESS IN SWEDEN

The fifth biennial congress of the International League Against Rheumatism was held in Sweden from September 3rd to 8th, in collaboration with the Swedish Committee on Rheumatism. At the opening of the congress Dr. FORTESCUE FOX, president of the League, pointed out that after ten years of intensive and co-ordinated study of that group of diseases which came under the heading of rheumatism they were in a position to realize the medical significance of their work. Even more important and more exacting, however, was its social significance. They were called upon to apply their knowledge, their technique, their methods, and their organization to the relief of suffering and disability in the community.

The principal discussions were held in the university at Lund, under the presidency of Professor SVEN INGVAR. In the course of the meeting reports were presented on the influence of housing on rheumatism, and a committee of inquiry was set up composed of Drs. F. J. POYNTON (England), G. EDSTRÖM (Sweden), and G. DANISCHEVSKY (U.S.S.R.) The chief subjects discussed were: allergy in rheumatic diseases; *x*-ray appearances in arthritis; the nature of myalgia; and orthopaedic treatment in arthritis.

Myalgia in Rheumatic Diseases

Dr. JOHN FREEMAN (London) and Professor MOURIQUAND (Lyons), with many other speakers, held that allergy could not be considered as an aetiological factor in either rheumatic fever or rheumatism, although allergic conditions occurred in infective cases. Professor Mouriquand thought "sensitization" a better term than allergy, as it had no immunological connotation. Professor F. KLINGE (Münster) contrasted two possible biological conceptions of rheumatism: first, an analytical conception, according to which the term "rheumatism" became meaningless, because many kinds of morbid conditions had rheumatic symptoms; secondly, a synthetic conception of a definite rheumatic entity, for which the theory of allergy furnished a sound basis. There was, he stated, increasing evidence that rheumatism depended on damage done to certain tissues of the mesenchyma, as a result of a special allergic reaction to various kinds of antigens. Professor RÖSSLE (Berlin) pointed out that the morphological equivalents of allergy varied with the tissues and organs affected: in smooth muscle fibre there was cramp, in the mesenchyma a type of chronic inflammation with local proliferation. Non-specific inflammations, focal and diffuse, also played a part in allergic diseases, the nature of the inflammation being the same whatever the allergy.

Professor V. TALALAJEFF (Moscow) said that rheumatic fever could be regarded as of allergic infective origin. The reactivity of the organism was the cause of the disease, while the determining or exciting cause was infection. Dr. ANTON FISCHER (Budapest) regarded the theory of the allergic nature of rheumatism as not proven. Dr. F. GUDZENT (Berlin) pointed out that both rheumatism and gout were seen in families liable to allergic diseases; of his rheumatic and gouty patients 35 per cent. reacted to animal albumins and 55 per cent. to vegetable albumins. All rheumatic conditions were, he believed, due to an inherited or acquired increased functional reaction to foreign albumins.

Radiology in Arthritis

In discussing *x*-ray appearances in arthritis, Dr. BASTOS ANSART (Madrid) and others referred to common errors in radiological diagnosis, and the wide divergence between *x*-ray appearances and the functional state of the joints. Professor ROCHLIN (Leningrad) demonstrated that a great variety of aetiological factors, including normal degenerative factors, might produce radiological changes similar to those of arthritis. Drs. WEISSENBACH and FRANCON (France) found that serial radiographs assisted the differentiation of arthritis. Dr. G. VAN DAM (Amsterdam) showed in early cases of "infective arthritis" of the hand a transverse contraction with a destruction of bone in the articular cartilage of the heads of the metacarpals.

Nature of Myalgia

Professor SVEN INGVAR (Lund) regarded sciatica as myalgia due to traumatism and associated with circulatory disturbance, manifested by a lowering of the temperature in the affected limb, and not as a neuritis. Treatment generally should be directed at producing artificial hyperaemia, by vaso-dilator drugs, pyrifer (coli-vaccine), and general physical treatment. Professor JULIUS ROTHER (Berlin) drew attention to the importance in many myalgias of the effect of repeated exposure to cold in producing disturbances in blood circulation and body heat, this leading in time to a general defect in heat regulation. Dr. C. VOLTA (Barcelona) took the same view. Myalgia, shown clinically by pain, muscular contraction, and palpable infiltrations and nodules, was due to disturbances of blood circulation in the muscles. Dr. ERNST FREUND (Vienna) mentioned—in addition to possible infection, metabolic abnormalities, fatigue, strain, trauma, and chill—many other factors of causation producing a variety of tissue changes. Dr. J. B. BURT (Bath) pointed out the special liabilities of muscles acting in a confined space. So-called neuritis in the arm might be due, he believed, to myalgia or myositis of the supraspinatus or infraspinatus, both muscles confined between the scapula and a dense fascia. The same condition in the gluteus medius might set up pain in the leg. In these cases the affected muscle would be found to be tender, and should be treated with massage and heat.

Orthopaedic Treatment

Dr. WEISSENBACH and Professor P. MATHIEU (Paris) urged the study of posture in the early stages of rheumatism and the systematic prevention of deformity by means of splints and plaster bandages. Dr. LORING T. SWAIM (Boston) demonstrated the methods he used at the Brigham Hospital, Boston. In the early stages complete immobilization of the arthritic joint or joints overcame the injurious flexor spasm and gave the inflammation a chance of subsiding. Later, splinting was continued only at night to prevent the risk of spastic contraction during sleep. In all cases some support was necessary until the disease was no longer active, and in convalescence braces and exercises of various kinds restored joint function and maintained normal posture.

The congress was attended by representatives from many countries, especially the United States and Germany, and the concluding sessions were held at Stockholm in the presence of Prince Charles, the honorary president of the congress. It was agreed to hold the next international congress in England in April, 1938.

Scotland

Royal Sanitary Association of Scotland

The annual congress of the Royal Sanitary Association of Scotland was held at Montrose from September 9th to 12th.

NATIONAL UNFITNESS

Professor P. S. Lelean of the chair of public health in Edinburgh University, in his presidential address on national physical unfitness and some remedies, said that the cost to Scotland of unfitness was about £25,000,000 per annum. This was made up, as concerned the insured population, of 3½ millions for treatment, benefits, and administration, over 5½ millions for lost time, and 1½ millions for one-third of the cost of hospitals, clinics, and institutions; and as concerned the uninsured, of 1½ millions, 5 millions, and over 3 millions respectively. This vast annual expenditure for unfitness was further swelled by heavy losses due to minor ailments, which reduced efficiency without actually preventing work. The maternal mortality rate was also a serious matter, because last year, while the English rate fell to just over 4, Scotland's rate rose to well over 6. With regard to infant mortality rates, the latest complete data of the League of Nations for 1932 showed that fourteen countries in Europe had lower infant mortality rates than Scotland's 85 per 1,000. Although in 1900 the English rate had exceeded the Scottish by 17, in the past year England's rate was only three-fourths of the Scottish—namely, 57 as against Scotland's 77. Since so many infants now died, the next inquiry was naturally directed to the health of Scottish school children, and it had been found that out of 100,000 Glasgow scholars examined during 1934 and 1935 93,000, or 13 out of every 14, were defective. Of these 87,000, or 7 out of 8, suffered from remediable defects; 82,000, or 4 out of 5, had carious teeth; and 44,000, or nearly half, were of a low standard of nutrition, the average boy being 8 lb. under standard weight for his age. Concerning adolescents, the Army Medical Department considered that further reduction of recruiting standards would prejudice the efficiency of the Army. Yet published statistics of last year's recruiting stated that out of 80,000 recruits who presented themselves 17,000 were rejected at sight and another 17,000 after medical examination, making 2 unfits out of every 3 applicants. In 1917 medical examination of 2½ million men had revealed the appalling fact that 70 per cent. were unfit for front-line service. Therefore there had been no material improvement since that date. With regard to the fitness of workers, cases of sickness among the insured population of Scotland reached the huge total in 1934–5 of 395,000, so that on an average each worker was off work sick for eleven days. If those not insured were similarly unfit the total for Scotland's 5 million population in a single year would be 145,000 always sick, 1,123,000 cases of incapacitating sickness, and 53,350,000 days of sickness. The lesson to be drawn from all this was that fitness was clearly the citizen's first duty. From childhood he should be taught the science and art of being fit, and the key points of this education were diet and exercise.

DEVELOPMENT OF PUBLIC HEALTH SERVICES

On the second day Mr. A. L. Thomson, chief sanitary inspector for Motherwell, speaking of the development of the public health services in Scotland, said that with the present century had come fuller measures of domestic internal sanitation, a country-wide attack on slums, notable progress in the extension of public water supplies and sewerage, and town and regional planning. The story was one of evolutionary development, which in its cumulative results amounted to a revolution. A healthier outlook and a raising of the standards of living had been gained, but further progress was greatly obstructed by legal, financial, and administrative barriers, and removal of these should receive prominence in a national health policy. The cleaning up of the outdoor atmosphere of industrial towns had not yet been achieved, and it was surprising that an evil so obtrusive as smoke pollution should enjoy so much tolerance. Public cleansing was still conducted by obsolete methods, and only a new code would meet contemporary needs in this respect.

HOSPITAL SERVICES

In an address on the hospital services Mr. Stewart Reid, convener of the Public Health Committee of Glasgow Corporation, expressed the opinion that the State and local authorities should accept the whole responsibility for treatment of non-infectious as well as infectious diseases. The treatment of all sick persons should rest on a sound financial basis, and in any legislation that might result from the report of the Scottish Health Services Committee this phase of the question should be considered in such a way as to recognize that the problem of the voluntary hospital from a financial point of view was acute. The powers possessed by local authorities now ranged over the whole field of sickness so far as hospitals were concerned, and these authorities were in effect partners with the voluntary hospitals, but not in competition with them. There were at present two hospital systems: the voluntary hospitals, each of which formed a unit by itself and went its own way; and the statutory hospitals under the local authority administration, which were centrally controlled by the Department of Health for Scotland. The report of the Departmental Committee had commented on the insufficiency of hospital beds for maternity cases, tuberculosis, orthopaedics, etc., and on the shortage of facilities for general medicine and surgery; a position, it said, which raised acutely the question of the future of the hospital services. Concerning the provision of these additional facilities and accommodation, the report had indicated that while no action should be taken that might weaken the voluntary hospitals, any attempt to extend their financial commitments might have this effect, and the financial responsibility for making good these deficiencies should be placed on the public authorities. The report, therefore, did not recommend that the State should finance extensions or additions to voluntary hospitals. Under the permissive powers of the Local Government Act some local authorities had been active, but many were inactive, and this had been mainly due to financial difficulties. It was recommended that local authorities should receive an Exchequer grant of 50 per cent. of approved capital expenditure on hospitals. Questions of future administration would also arise, for, with the exception of the four large cities, none of the existing local health authorities in Scotland was in a position to provide independently a complete hospital service.

Orthopaedic Department in the Edinburgh Royal Infirmary

Arrangements have been made for the institution of an orthopaedic department in the Edinburgh Royal Infirmary. The department will be under the charge of Professor John Fraser, assisted by Mr. Walter Mercer and Mr. William Cochrane. An additional staff of two clinical assistants and a non-resident house-surgeon is being appointed. Clinical assistants already on the staff of the hospital will be afforded opportunity to work in the department if they so desire. The Board of Management has allocated Ward 2 for this service. It has been reconstructed and equipped in order to bring it into line with the most modern requirements of orthopaedic surgery.

CORRESPONDENCE

National Medical Services and the B.M.A.

SIR,—The controversial device of setting up a bogy in order to knock it down has long been discredited and should not be consciously used by reputable debaters, but that it has not been discarded is evidenced by the two letters in your last issue—on "National Maternity Service" from Dr. Somerville of Leicester, and on "Mechanized Medicine" from Dr. Taylor-Thomas of West Australia. The former draws a picture of a curious maternity case attended by a doctor and midwife at home, and the latter dramatizes a conversation between an insurance practitioner and his patient. The former asks, "Can anyone say that this is not a true picture of what happens?" and the latter says, "Only by such means can a living be made."

I do not deny that Dr. Somerville might be able to collect a number of instances which his story may in some respects resemble, nor that in certain insurance practices at certain times some such incident as that imagined by Dr. Taylor-Thomas may occur. But the animadversions of these two writers have no force at all unless such occurrences as they depict are inevitable or usual under the systems of practice which they condemn, and, in Dr. Taylor-Thomas's case, one must add, impossible under the system proposed. That this is so is their contention. It is quite untrue. In all classes of practice, whether general or specialist, whether domiciliary or institutional, one may, by searching, find out unfortunate happenings and some lack of perfect care or judgement in the conduct of a case; but such a combination of these as is postulated by Dr. Somerville in a normal confinement is extremely unlikely to occur nowadays, and the picture drawn by Dr. Taylor-Thomas of insurance practice in general is nothing less than an outrageous caricature—not that indeed, for it bears no relationship at all to the truth. His statement that "any intelligent nurse could run a panel practice successfully" is all the evidence of this that is required. No more need be said, for it is perfectly evident that he is, naturally enough, quite unacquainted with the nature and conduct of insurance practice in this country.

The proposals of the Association, both with regard to a national maternity service and with reference to the improvement of insurance practice or to the establishment of a general medical service for the nation, are specifically designed to minimize the risk of such happenings as these two writers imagine. This is the gravamen of my charge against Dr. Somerville: that he states that the Association's proposals will "perpetuate just exactly" the kind of practice which he deprecates, whereas the memorandum embodying those proposals, to which he refers as having been unanimously approved by the Annual Representative Meeting, categorically sets out as one of the essential provisions "the services when necessary of a second practitioner (for example, to administer an anaesthetic)." Thus to ignore the specific provision proposed to be made to meet the very situation which the writer describes and condemns is quite inexcusable.

The proposal for the universal hospitalization of maternity cases, normal and abnormal alike, with or without the provision of attendance by experienced general practitioners, has, of course, been very carefully examined. It is condemned alike by economic considerations, by statistical facts, and for other reasons. The proposal, too, that in any national medical service there should be a small monetary payment by patient to doctor on the occasion of each consultation has been fully considered, both by the profession and by the State. The common conclusion is that it would tend to defeat the main purpose for which the service was established. If any positive moral is to be drawn from the suggestions of these letters I submit that it should be, as Sir Farquhar Buzzard so ably pointed out in his presidential address, that the time factor in modern medical practice is of the first importance, and that there is real need for the readjustment of fees, both in private and in insurance practice, obstetrical and general, so that there should be less temptation for any practitioner to sacrifice quality of service to number of persons served.—I am, etc.,

London, N.W.11, Sept. 12th. HENRY B. BRACKENBURY.

National Maternity Service

SIR,—The letter of Dr. C. L. Somerville in your issue of September 12th (p. 561), with reference to a national maternity service, requires a reply.

The description of the happenings at a home confinement may be true of a confinement under bad conditions, but I do not agree that it is a true picture of what generally takes place. That there is room for improvement in home confinements, especially as regards facilities, will not be denied, and the Association will no doubt make an effort to obtain such improvements as are possible. This does not mean, however, that all confinements ought to take place in maternity hospitals or nursing homes, which is what Dr. Somerville suggests.

May I remind him that he refers to matters which many authorities do not accept—use of masks, and throat swabs from all attendants; but I do not see why even these cannot be applied to home confinements as well as maternity hospital confinements. The British Medical Association's Report on a National Maternity Service makes it very doubtful whether normal confinements are safer in a maternity hospital than in the patient's own home.

Dr. Somerville has coined a new term—"general practitioner specialists." This is an attempt to soften the "specialist" by prefixing "general practitioner." After stating that "they must be men of experience and prolonged training and specialists at their job," I fail to see how much of the prefix still clings to these "specialists."

I submit that all general practitioners who have been in practice for some years are just as capable of dealing with normal confinements, including mid-cavity forceps delivery, as any specialist. Most general practitioners can see that attempts are being made to specialize all branches of medical work, and Dr. Somerville is really urging *the specialization of normal confinements.*

The issue is, of course, that of a State medical service. Many general practitioners would welcome this in preference to the increasing encroachments made by specialization. It would give the practitioner more leisure and better facilities for carrying out his work.—I am, etc.,

Scarborough, Sept. 12th. N. WALSH.

Treatment of Hallux Valgus

SIR,—In my recently published book, *The Foot*, I have set out in some detail my ideas upon the aetiology and treatment of hallux valgus; it was not, therefore, my intention to join in the discussion at present occupying your correspondence columns. As, however, some of the writers have invited further views I venture to give mine, very briefly, and with great trepidation as becomes a general surgeon treading upon orthopaedic soil. I cannot believe that any consideration of the treatment of hallux valgus can be of value if it ignores the aetiology of the condition, and this I conceive to depend as much upon evolutionary tendencies as upon the usually accepted local factors.

The most recent change in the human foot from the evolutionary point of view has been the approximation of the previously prehensile great toe to the other digits, a change which primarily affects the metatarsals. In this way the first metatarsal has come to lie almost parallel to the others, and the adductor muscles and associated ligaments, being now of little value, are undergoing retrogressive changes. In accordance with the general biological law the most recently acquired change will be the first to suffer in the presence of abnormal conditions. Such conditions arise when excessive strain is thrown upon the fore part of the foot, by the adoption of high heels, by abnormality of gait, or by occupational demands. The foot then attempts to return to its previous state, and the separation of the first metatarsal from the others leads to the condition which I have for many years described as "splay foot." This is a definite atavistic change, and no better evidence of its character is needed than the associated rotation of the toe upon its long axis, so that the nail looks mesially and the pulp is directed outwards—that is, the position occupied by the prehensile great toe of the large apes. If it were not for the secondary retrogressive changes in the adductors and the ligaments in the vicinity the toe would follow its metatarsal and point inwards; as it is this is impossible, and so deviation at the metatarso-phalangeal joint occurs. This, in brief, is, I believe, the aetiology of the condition; the arguments in favour are further elaborated in the book mentioned.

If this is correct the treatment of hallux valgus must start with a consideration of the splay foot, of which it is merely a manifestation, a common and difficult condition not always capable of remedy. It will be clear, too, that some of the operations advised bring about their result by the tenotomy of the adductor tendons, etc., which removal of the base of the phalanx, or alternatively of the sesamoids (a useful operation recommended by Robinson of Wisconsin), must of necessity imply. Removal of the head of the metatarsal produces a like effect by shortening the distance between the origin and insertion of these muscles.

It has fallen to my lot, owing to my connexion with the London Foot Hospital during the past twenty years, to see a very large number of bad results from hallux valgus operations, and I can assure some of your enthusiastic correspondents—one says, "we are practically certain, by removing sufficient bone, to obtain one of the most satisfactory results in surgery" (*Journal*, September 12th, p. 559)—that members of the general public have a poor opinion of surgery in this connexion as a result of their experiences. Nor does the secret lie in the removal of "sufficient bone," for I have seen many cases of "dangle-toe" after partial removal of the metatarsal or phalanx performed by the most competent surgeons.

Since the valgus deformity is but part of a much greater disturbance of the foot as a whole, I do not believe that any stereotyped operation should be adopted, but that each case should be judged upon its symptomatology, bearing in mind the aetiology of the condition and the fact that we are dealing with a local manifestation only in a general splay foot. I will not encroach upon your space by detailing the points which should be considered before deciding upon the type of operation to suit any particular case; I even hesitate to prolong this letter by pointing out that since splay foot lies at the basis of the condition it is not to be expected that operation upon the metatarso-phalangeal joint will produce 100 per cent. of cures; nor are all the failures to be laid at the door of the surgeon, but rather to that evolutionary trend which has destined the fore part of the human foot to be the retrogressive structure it is.—I am, etc.,

London, W.1, Sept. 12th. NORMAN C. LAKE.

Blood Replacement after Haemorrhage

SIR,—The article by Dr. William Hunter in to-day's issue of the *Journal* (September 12th, p. 537) on the subject of blood replacement after haemorrhage is of considerable interest in that it criticizes the inefficiency of blood transfusion as an emergency measure. The time lost in obtaining a suitable donor may suffice to kill the patient. In Moscow the time loss has to some extent been eliminated by the use of whole blood obtained from corpses. This material may be stored and is always ready for use, though it will not keep for more than about one month.

Dr. Hunter advocates gum solution in an emergency. Surely whole plasma, which may be collected without much difficulty and stored, presumably indefinitely, would be a more efficient fluid than a foreign material such as gum solution. No preliminary grouping would be required if Group I (Moss) plasma were used. On the other hand, if large quantities were produced the harmful agglutinins could be removed by the process of agglutinin adsorption. Such a material would also be of the greatest value in the treatment of shock, where no blood cells have been lost and the diminishing blood volume is accompanied by increasing concentration of the red cells.—I am, etc.,

W. W. WALTHER.

Pathological Department, Queen Mary's Hospital for the East End, Sept. 12th.

The Path to Freedom

SIR,—Many people, both undergraduate and postgraduate, will have read and enjoyed the philosophical study of the examination system by the Dean of St. Mary's Hospital Medical School (*Journal*, September 5th, p. 449). With regard to the formidable "casualty lists" in the final professional examination, surely these would be reduced were a definite limit set to the number of times a student may present himself for any given examination throughout his entire course. In reputable American and Canadian schools no one may repeat a "major subject" (for example, anatomy, surgery, medicine, etc.) more than once. This can be unduly severe, but surely three attempts is an ample margin.

Again, are the principles of external examination and examination by class work mutually exclusive? It seems to me that this is not so. In the American schools, I believe, the two sets of marks are considered together by the responsible examiners. In Scotland no undergraduate is allowed to sit for a professional examination unless he has satisfied the department teaching a particular subject that he is fit to do so. To obtain his "sign-up" he must attend a certain percentage of all lectures,

practical work, and/or clinics, as the case may be, and pass such "term examinations" as are set from time to time.

In medical schools, as in other places, the best teachers are born and not made. Nevertheless, much could be done by professors in these days to enliven their departmental programmes and simplify the task before the undergraduate. For example, in many universities the number of systematic lectures could be sensibly reduced and a wider use made of typed or printed synopses, with suggestions for further reading on points of special importance. Specially helpful are joint lecture-demonstrations organized by several departments—for example, where a particular disease or group of diseases is treated from its various standpoints—pathological, diagnostic, and therapeutic—at the same time. I can recollect several in my final year which made forcible presentations of many complex topics. And, lastly, can one plead for the wider use of tutorial classes at which smaller groups than a whole university year could both be questioned and discuss a series of topics? This method, which is employed very profitably in the University of London D.P.H. course, would be very helpful in accustoming undergraduates to present their ideas as clearly in speech as on paper—a matter of no little importance in viva voce examinations.—I am, etc.,

C. D. PRESTON,
M.B., Ch.B., D.P.H.

Bristol, Sept. 10th.

Tuberculous Lesions in the Eye

SIR,—In the *Journal* of August 22nd (p. 405) Dr. W. Camac Wilkinson, in a letter on the discussion on tuberculosis as a cause of obscure eye disease which took place in the Section of Ophthalmology at Oxford, singles me out by name from among the other participants whose remarks disclosed "only old-fashioned ideas." My heinous offence, as Dr. Wilkinson sees it, is that my alleged remarks are merely a repetition of what he said twenty years ago, and again "definitely" in 1926. As Dr. Wilkinson holds that phlyctenular conjunctivitis and keratitis are "lesions caused by tubercle bacilli *in situ*," I have no desire to dispute with him the priority of his teaching. In fact, I dissociated myself from such views, and emphasized that there was not a shred of evidence for such a contention. There is, indeed, evidence that a tuberculous allergy underlies most, but not by any means all, cases of phlyctenular ophthalmia. But this is a totally different matter from regarding the phlycten as caused by the tubercle bacillus *in situ*, and has but little relevance to tuberculin therapy as a panacea.—I am, etc.,

ARNOLD SORSBY.

London, W.1, Sept. 8th.

Manipulative Surgery: An Osteopath's Criticism

SIR,—I read with great interest Mr. A. S. Blundell Bankart's article in the *Journal* of August 29th (p. 416), on the use and abuse of manipulative surgery. With the bulk of it I am in agreement, especially with his remarks on the knee-joint and on the tuberculous elbow case.

I hope that in flattening a flat-foot, or a foot strain, which, incidentally, is an incipient or potential flat-foot, Mr. Bankart does not think that he is carrying out the work of a bone-setter or an osteopath. His procedure sounds like an abuse of manipulation. Whether the manipulator be an orthopaedic surgeon, an osteopath, or a bone-setter, the breaking of joint fixation is the one thing essential to all. But why should one deliver the therapeutic force in the direction of a continuation of the trauma or abnormality? Why exaggerate the lesion and leave it so? When an osteopath breaks fixation, anywhere in the body, he sees to it that the breaking force is delivered in such a way that a continuation of it carries the offending bone into a position of normality. There is a danger of half-learning, half-absorbing things—second-hand as it were. It requires more skill from an osteopath to adjust a foot, more knack from a bone-setter to set a foot, than it does force to flatten a flat-foot, considerable though that be.

The object of this letter is not to criticize the manipulative technique of Mr. Blundell Bankart, but to point out a gross misstatement of fact. He states that osteopathy "has been investigated up to the hilt." Not one of the medical witnesses during the inquiry of the Select Committee of the House of Lords on the Regulation and Registration of Osteopaths Bill was able to assert that any medical investigation of osteopathy had been carried out in this or in any other country.

Through your journal, Sir, I would ask your readers to believe that no investigation has been made into osteopathy by the medical profession in this country as distinct from the personal experiences of possibly prejudiced individuals.—I am, etc.,

W. KELMAN MACDONALD, M.D., D.O.

Edinburgh, Sept. 8th.

Obituary

LORD MOYNIHAN

A memorial service for Lord Moynihan was held on September 14th at St. Martin-in-the-Fields. The Duke of York was represented by the Hon. Thomas Coke, the Lord Chancellor by Mr. A. J. N. Patterson, the Admiralty by Surgeon Vice-Admiral Sir Basil Hall, the Army Council by Sir Herbert Creedy, and the Minister of Health by Mr. E. J. Maude (Deputy Secretary to the Ministry). The following members of the Royal College of Surgeons walked in procession, wearing their robes: Sir Cuthbert Wallace, Mr. Victor Bonney, Mr. W. Girling Ball, Mr. C. H. Fagge, Mr. G. Gordon-Taylor, Mr. W. Sampson Handley, Mr. Hugh Lett, Mr. W. H. Ogilvie, Mr. Graham Simpson, Mr. H. S. Souttar, Sir James Walton; and Sir Arthur Keith, Mr. John Beattie (Conservator of the Museum), Mr. Kennedy Cassels (secretary), and Mr. Horace H. Rew (Director of Examinations). Among others present were: Sir Henry Brackenbury, representing the British Medical Association; Professor George E. Gask, the Medical Society of London; Dr. Eardley Holland, the British College of Obstetricians and Gynaecologists; Mr. Warren Low, the Royal Society of Medicine; Major-General W. P. MacArthur, representing the Director-General, Army Medical Services; Dr. H. A. McEwen, representing the Chief Medical Officer, Ministry of Health; Mr. K. W. Monsarrat, the Moynihan Chirurgical Club; Dr. Sidney Phillips, the Royal College of Physicians; Professor Lambert Rogers, the Faculty of Medicine and University of Wales; Sir Humphry Rolleston, the Imperial Cancer Research Fund; Sir Squire Sprigge, the *Lancet*; Mr. Julian Taylor, the Association of Surgeons of Great Britain and Ireland; Sir William Wheeler, the Royal College of Surgeons in Ireland; and Sir William Willcox, the Society of Apothecaries.

We announce with regret the death, at the age of 36, of CLEMENT STURTON, M.B., B.Ch.Camb., F.R.C.S. Dr. Sturton had been a member of the Association since 1923 and had done good service on the Northamptonshire County Panel Committee. "W. McA. E." writes: Dr. Sturton's early death brings to an end a career of promise. At St. John's College, Cambridge, he won an exhibition, and received second-class honours in the Natural Sciences Tripos in 1920. In the same year he gained a Joint Shuter Scholarship at St. Bartholomew's Hospital. Five years later he took the F.R.C.S. Dr. Sturton's goal was the mission field; accordingly he worked in the Belgian Congo with the Africa Inland Mission. Later

he joined the Government service, and was placed in charge of a hospital at Lagos, Nigeria. On his return to England he entered into partnership with Dr. A. G. Tolputt and Dr. T. H. Baillie at Kettering, Northants. He was on the staff of the Kettering Hospital. His work greatly endeared him to his patients, and he was indeed a "beloved physician." Dr. Sturton married Mary, second daughter of Dr. Jabez Pratt Brooks; she survives him with three children.

We announce with regret the death, on September 8th, at Archerfield, Saltford, near Bristol, of Dr. GEORGE GILMORE DRAKE WILLETT, in his eightieth year. Dr. Willett received his medical education at Bristol Medical School, University College, London, and Durham, and qualified M.R.C.S. in 1881 and L.S.A. in 1882. In 1887, after a period of practice in King's Square, Bristol, he moved to Keynsham, near Bristol, where he practised for forty-six years, until ill-health compelled him to retire in 1933. He was medical officer in charge of the Keynsham Isolation Hospital from its inception to its closing down some years ago under the centralization scheme of the Somerset County Council, and a member of the Somerset Panel Committee until his retirement. During the war Dr. Willett took a great interest in the voluntary Home Defence Corps, and also served on a medical board in Bristol. For fifty-three years he was a member of the British Medical Association, and his father and grandfather, the former practising at Chepstow and the latter at Bristol, were members before him. Dr. Willett was very fond of horses and was a keen huntsman, but his principal hobby was gardening. He is survived by two daughters.

We announce with regret the death, at the age of 59, of Dr. ERNEST JAMES CHAMBERS of Doncaster. Dr. Chambers was a student at the Westminster Hospital and took the M.R.C.S., L.R.C.P. in 1908. He was a house-physician at the Westminster Hospital for some time before taking up general practice at Doncaster, where he soon became very popular. He was active in the fight over the introduction of the national health insurance scheme. During the great war he served with the 6th South Lancashire regiment at Suvla Bay, in Egypt, and later with the Kut Relief Expedition. He had always been interested in anaesthesia, and when in 1926 he was prevented from continuing general practice he decided to take up this specialty. After a visit to the United States he returned to this country a confirmed believer in the McKesson machine, about the use of which he published several articles. He was honorary anaesthetist at the Doncaster Royal Infirmary and Rotherham Hospital for several years. "B. C." writes: Many people would, I think, feel that in the words "a beloved physician" was most adequately summed up the character of "E. J. C." Even now, ten years after he left general practice, patient after patient recalls his kindness and skill. His friends were legion, and in all ranks, and his unique mixture of geniality, freakish humour, gentleness, and quaint "practicality" made him welcome anywhere. No doubt he made enemies by his outspokenness and he was ever a champion of anyone whom he thought unfairly treated, yet his opponents cannot but acknowledge his zeal for the causes for which he worked, at times to his own disadvantage. A hundred acts of kindness endeared him all over the town, and his election to the Town Council two years ago was a tribute to his personality.

Universities and Colleges

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on September 7th, with Professor Archibald Young, the president, in the chair, the following were admitted Fellows of Faculty: Amiya Nath Chakraborty, M.B., John Stirling Hogg, M.B., Ch.B., Mustafa El Diwany, M.B., B.Ch., Robert Napier, M.B., Ch.B., Thomas McMurtrie Sharp, M.B., Ch.B., Henry Wapshaw, M.B., Ch.B.

Medical News

An exhibition demonstrating the causes and effects of atmospheric pollution is to be held throughout October in the Science Museum, South Kensington. It has been arranged by the National Smoke Abatement Society in conjunction with the Science Museum, and will be opened on October 1st by the Minister of Health, Sir Kingsley Wood. An exhibit by the Fuel Research Station will be devoted to the researches that are being conducted with a view to developing a domestic fire that will burn coal smokelessly. The Department of Scientific and Industrial Research will demonstrate the nature and causes of smoke, and another exhibit of the department will be concerned with the investigations of atmospheric pollution now being carried out all over the country. In other parts of the exhibition there will be anatomical specimens, including the lungs of town and country dwellers, illustrating the destructive effects of a smoke-polluted atmosphere, and a series of model houses in which methods for the prevention of domestic smoke will be shown. Admission to the Science Museum, which is open from 10 a.m. to 6 p.m. on weekdays and from 2.30 to 6 p.m. on Sundays, is free.

A course of seven lectures and a practical demonstration on air raid precautions and first aid in chemical warfare will be given to members of the medical profession and trained nurses on Fridays at 5 p.m., commencing October 2nd, 1936, at 9, Chesham Street, S.W.1. The fee for the course is 7s. 6d.; entries should be made and fees paid not later than September 26th. Inquiries should be addressed to the County Secretary, British Red Cross Society, 9, Chesham Street, S.W.1. The lectures will be given by Major H. N. Stafford, O.B.E., *M.C.*

In a recent richly documented thesis (*Thèse de Paris*, 1936, No. 480) Dr. B. Villaret, the son of the professor of therapeutics and hydrology in the Paris faculty of medicine, gives a detailed description of the climatology, meteorology, and pathological aspects of Paris as a whole and of its various districts, with special reference to the influence of the pollution of the air caused by factories and motors, the prevalence of infectious diseases, the effect of noise on health, and the medical aspects of further extension of the city.

The Appleton-Century Company announces for early publication *Medicine and Mankind*, edited by Dr. Iago Galdston, price 8s. 6d.

The *Transactions* of the twenty-second Annual Conference of the National Association for the Prevention of Tuberculosis, held in London from July 16th to 18th, 1936, have now been published, and copies may be obtained from the Secretary, N.A.P.T., Tavistock House North, Tavistock Square, London, W.C.1, price 7s. 6d. each, post free.

The Medical Faculty of the University of Vienna has published a handbook of the various post-graduate courses for medical practitioners to be held from September 1st, 1936, to August 31st, 1937. Application for the handbook, which is free, should be made to the special post-graduate office of the Medical Faculty, Alserstrasse 4, Vienna IX.

The tenth Annual Conference of the International Union Against Tuberculosis, which was to have been held in Lisbon from September 7th to 10th, has been adjourned. Date and particulars of the fresh venue of the conference will be announced as soon as possible.

Surgeon Commander Arthur Sydney Gordon Bell, R.N. (retired), has been appointed Deputy Lieutenant for the County of Huntingdon.

The office of the Latin-American Medico-Chirurgical Association, which was founded at Lima in 1933, has been transferred to Buenos Aires under the presidency of Professor Aráoz Alfaro.

Dr. Henry E. Sigerist of Baltimore was recently elected president of the American Association of the History of Medicine.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and *the British Medical Journal* is EUSTON 2111.

The **TELEGRAPHIC ADDRESSES** are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology, Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediocra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

Cause and Treatment of Dermatitis

"PUZZLED" writes: I shall be grateful for suggestions as to cause and remedy in the following distressing case. Some two years ago a patient, an elderly lady, knocked her ankle, and within six months the leg, from the ankle to within a few inches of the knee, was a mass of dermatitis: dye was in the stocking, and after the blow the stocking stuck to the wound. Various pastes, ointments, and lotions have been tried and elastoplast without relief. Finally the deep-seated veins were injected during a lull in the storm, and the leg cleared up completely. About three months later, however, it broke down again, and the pain and irritation are even worse than before. I have again tried rest, lotions, etc., without the slightest effect, and the only relief obtainable is after a short walk. A coarse false skin forms within forty-eight hours and then the irritation becomes intense, until the patient has scratched the area bare and the leg is bleeding and oozing.

Foreign Bodies in the Cornea

Dr. W. M. FORSTER (Oxford) writes: Here is a curiosity that may be worth discussion. Like most "G.P.s" I find that a foreign body in the cornea is one of the commonest minor surgical conditions, but I do not remember ever having a case in a child. This seems very odd. The adult has learned to protect himself, and especially his eyes; yet foreign bodies are continually embedding themselves in his cornea. The child, on the other hand, repeatedly gashes himself with edged tools, falls into ponds, upsets boiling kettles over himself and his friends, covers himself with unpleasant abrasions, and exhibits an amazing virtuosity in the insertion of improbable objects into the natural orifices of the body, but, in my experience, his cornea is invulnerable. Why? Is my experience general? If so, it is a fantastic state of affairs. Is there any ophthalmological explanation?

Income Tax

Change from Bookings Basis to Cash Basis

"C. R. M." points out that when such a change takes place it must happen in the first year of the new arrangement that some debts must be written off as bad on which tax has been paid on the bookings basis. Is no allowance due for these amounts?

*** Tax was accounted for not on the total amount of the bookings—less expenses—but on that amount less an estimated allowance for bad debts. In the case of some clients the deduction will no doubt have been inadequate, but the contrary may well be the case as regards other clients, and on balance there should be little difference if the original estimates were carefully made. If the balance is against "C. R. M." the loss must be regarded as the price paid for the convenience of the cash basis, because neither he nor the Revenue is entitled to reopen assessments for past years on the ground that the agreed deduction has in fact proved insufficient or excessive. As regards years falling under the new (cash) arrangement, the basic principle is that the cash receipts of a particular year fairly represent the value of the bookings of *that* year, and any deduction for bad debts would vitiate that assumption, and therefore no deduction can be claimed.

Ship Surgeon's Fees

"R. C." is a ship surgeon, and is usually absent from the United Kingdom for nine months of the year. He is unmarried, and when in this country uses his parents' residence. He agrees that he is liable to tax on his salary, but inquires as to the position with regard to the earnings of private practice on board.

*** As "R. C." cannot show that he has any residence abroad he must be regarded as a British resident—there being nothing to displace that assumption, which arises from his original domicile and habit of life. As a British resident he is liable in respect of professional profits, whether they are earned in the United Kingdom or abroad. The persons referred to by "R. C." are on a different footing, as they have, presumably, foreign residence and come to the United Kingdom as visitors.

LETTERS, NOTES, ETC.

Electrical Aids to Hearing

Dr. F. G. CAWSTON (Durban, S. Africa) writes: The normal ear and eye have such powers of adjustment that a voice or object is as distinct at a comparative distance as it is when listened to or viewed close at hand. It is only those who suffer from defective hearing who have to come close to the average speaker. Aids to hearing do not altogether allow for such an adjustment, and tend to intensify adventitious sounds rather than to render the words of a speaker more distinct. Though the human voice over the telephone is usually quite natural, most electrical aids give the speaker the suggestion of barking. This difficulty might be overcome if the electric power could be derived from the main current through a double transformer, which would also avoid the proximity of a battery for persons suffering from tinnitus. For investigation purposes expensive apparatus will still be required, but it is hoped that the National Council for the Deaf and allied bodies will in the near future enable the deaf to obtain electrical aids which are more in keeping with the cost of production.

Presentation to Sir Arthur Hall

Dr. E. FRETSON SKINNER (Sheffield Royal Hospital) writes: Owing to an oversight the invitation to subscribers to the Sir Arthur Hall Portrait Fund did not include the wives of those medical men who had subscribed. These ladies will be welcome at the presentation.

"Blood Pressure"

Dr. J. S. MEIGHAN (Glasgow) sends us the following extract from the *Daily Gleaner*, published in Kingston, Jamaica: "A twenty-four-course lunch is child's play to Mr. Kao Wan-po, aged 50, a retired Army officer. He eats 10 lb. of pork, 3 lb. of beef, and sixteen large bowls of rice every day. He says he would eat more, but his doctor has warned him that he is suffering from high blood pressure."

Corrigendum

In the Educational Number of the *Journal* (September 5th, p. 502), under the heading "Medical Officers of Health," there is an erroneous reference to the Sanitary Officers Order, 1926. This Order was revoked by the Sanitary Officers (Outside London) Regulations, 1935, and replaced by these Regulations and the Sanitary Officers (London) Regulations, 1935.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 45, 46, 47, 48, 49, 50, 51, and 54, of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 167.